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ABSTRACT

This publication identifies and discusses considerations in facilitating the installation of competency-based education (CBE) programs and for maintaining effective program operation. Where appropriate there is also discussion of the possible effectiveness of various strategies as used by change agents at different stages of implementation and in operationally varied CBE contexts. Major sections of the paper focus in turn on CBE implementation strategy considerations for schools and districts, implementation considerations for federal, state, and local agencies, and potential problems of CBE implementation. A bibliography of relevant publications is also included. (Author/JG)

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STRATEGIES FOR IMPLEMENTATION OF COMPETENCY BASED EDUCATION PROGRAMS

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PREFACE

This paper identifies and discusses considerations in facilitating the installation of competency based education (CBE) programs and for maintaining effective program operation. The paper reflects information presented in other Oregon Competency Based Education (OCBE) Program documents. For example Paper 1, The Minimum Standards for Competency Based Education in Oregon: An Overview, describes the Oregon context for OCBE program activities. Paper 2, Alternative Models of Competency Based Education, presents a working definition of competency based education.

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The operating definition of competency based education referenced in the paper was presented in the OCBE document Alternative Models of CBE by H. Del Schalock.

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INTRODUCTION

The introduction and operation of any innovation in schooling is influenced by considerations not directly related to characteristics of the innovation itself. These considerations are aspects of the school environment in which an innovation is introduced. They relate, for example, to procedures for staff orientation and training related to the innovation, to resource distribution, feedback operations, and to carefully sequenced implementation of the innovation.

These considerations may be addressed through various procedures to facilitate the smooth implementation of an educational innovation. Combinations of such procedures may be conceptualized as implementation strategies, or systematic action plans that reflect an interplay among the considerations.

Implementation strategies influence the form and the fate of specific educational innovations. Where such strategies are effective, new programs or changes are tried out in a context that enhances their potential success. Where implementation is poorly planned or ineffective, even the most promising innovations founder.

This paper discusses considerations related to strategies for the implementation of competency based education (CBE) approaches. Where appropriate there is also discussion of the possible differential effectiveness of various strategies, at different stages of installation, in operationally different CBE contexts, and by different change agents.

The paper is intended to be provocative rather than prescriptive; its suggestions are presented as alternatives rather than imperatives. The information presented derives from several sources. Professional literature highlights strategies for major or comprehensive change in education. Such changes are represented, for example, by innovations designated as competency based education and competency based teacher education, performance-based education, differentiated staffing, team teaching, and outcomes-based instruction. Additional literature reflected in this paper examines smaller scale change. Such change is represented, for example, by the incorporation of any concept, attitude, skill, or tool in education by a unit that has not incorporated it previously. Various unpublished sources provide further information. The paper also reflects the experiences of individuals engaged in introducing, installing, integrating, and maintaining the operation of planned change in education.

Competency Based Education: A Definition

The definition of competency based education employed in this paper is presented in "Alternative Models of Competency Based Education" (Schalock, 1976).

> [Competency based education is]...a process that facilitates with a known degree of effectiveness the acquisition of desired outcomes in learners -- including the ability to perform tasks related to success in job or life roles -- documents the achievement of these outcomes, and links graduation requirements to specific performance levels on a particular set of outcomes (pp. 42-43).

The definition details three categories of CBE characteristics: defining, enabling, and unique characteristics.

Defining Characteristics

It is proposed by Schalock that the essential elements of a competency based education program include:

- o A listing of outcomes desired from instruction, including outcomes that reflect the ability to function effectively in life roles.
- o The identification of a minimum set of these outcomes as those needing to be demonstrated as a basis for graduation;
- o Instructional programs that enable students to achieve the various outcomes desired from schooling;
- o The means by which to evaluate outcome achievement, and certify that outcomes have in fact been achieved, including:
  - --measures of outcome achievement that follow directly from the statement of desired outcomes;
  - --standards that indicate clearly the level of performance (criterion) that must be met on each outcome measure for outcome achievement to be judged satisfactory.
- o Procedures that enable students to individualize learning programs and assessment processes;

- o Procedures that enable students to receive instruction until learning outcomes are achieved; and
- o Procedures that assure the continuous adaptation and improvement of instructional programs on the basis of student performance in relation to the learning outcomes desired from the program.

These seven defining characteristics, it is suggested, are critical to competency based education programs.

Enabling Characteristics

Schalock suggests that at least three enabling features are required for a competency based program to function optimally:

1. A means for identifying and obtaining agreement on the educational outcomes sought by a district, and a means for insuring that they reflect:
   - o social conditions, both present and anticipated; and
   - o what is known about human development and learning.
2. A means for managing or administering the program which insures:
   - o the functional linkage of program planning, operating and budgeting procedures;
   - o an information management system that supports data dependent decisionmaking; and

- o the appropriate preparation, placement and utilization of personnel.

3. A means for arriving at program related decisions that makes explicit for each major category of decision to be made:
   - o the structure or "mechanism" through which the decision is to be made (e.g., an individual teacher or team of teachers, a departmental or grade level committee, a school-wide committee, a school-community council);
   - o the groups to be represented in the decisionmaking process;
   - o the procedures to be followed in arriving at a decision; and
   - o the data to be considered in arriving at a decision.

Unique Characteristics

Finally, Schalock suggests that there are only three aspects of the defining and enabling characteristics that have been identified that are unique to the idea of competency based education. These are:

- o The insistence that a minimum set of the outcomes desired from schooling be defined in terms of the ability of students to function effectively in life roles when they complete school;
- o The requirement that a minimum set of these

outcomes (competencies) be demonstrated as a basis for graduation from school; and

- The requirement that performance in relation to this minimum set of outcomes be summarized and displayed as part of the certification process.

CBE Implementation: A Continuum

The period of competency based education implementation may be conceptualized as a continuum that begins with activities designed to orient potential users to CBE, and to provide them with information necessary to make sound judgments about the merits of the innovation. Subsequent activities relate to the "adoption" of CBE, or the decision to try CBE out in schools and classrooms, and extend to procedures designed to plan specific program characteristics, and to reconcile the program and prevailing structures of the adopting units. Activities designed to monitor, evaluate, and maintain the effectiveness of total CBE program implementation complete the continuum.

In presenting a framework for analyzing the levels of installing a given innovation, Hall and his coworkers (1975) observe that it is commonly overlooked "that innovation adoption is a process rather than a decision-point -- a process that each innovation user experiences individually" (p. 52).

McLaughlin (1975), in a discussion of classroom organization change projects, notes that the implementation of such projects requires users to work out their own styles

and techniques within a broad philosophical framework. Project goals and methods are best formulated by users as they attain skills appropriate to the innovation.

It may be useful for some planning purposes to view the CBE implementation continuum as composed of two general phases: pre-adoption and post-adoption. Hall and Jones (1976), in a comprehensive discussion of competency based teacher education programs, emphasize the importance of carefully planned, systematic pre-adoption activities.

> A plan of action for actually getting the CBE program adopted must be designed along with the conceptual development of the program...the use of the term adoption does not mean that an educational institution is adopting someone else's CBE program, rather, the term refers to the assimilation of the CBE program being developed by the adopting institution. Ideally this CBE program includes "adapted" components from other programs as well as development of unique components. Regardless of the origin of the component innovations, the job is still to get the "box" into effective and widespread use within the institution (pp. 236-237).

Bassi and Watson (1974) studied certain variables perceived to "get the box into effective and widespread use," and to keep it there. They conceptualize the time at which installation is complete and effective, and the innovation is a well integrated part of the curriculum, as representing "institutionalization" of the innovation. Institutionalization, then, is seen by them as the promise at the end of the installation continuum. Systematically planned and applied implementation strategies should help ensure that this gold-bright vision does not yellow through inattention.

IMPLEMENTATION STRATEGY CONSIDERATIONS

Generating Support

Hall and Jones (1976) observe that changes may be attempted or introduced in a school system "from the outside with loud banging on the doors..." or "from the inside" with persuasive information and "steady logic" (p. 250). The reality and durability of change imposed from outside is not promising. Such changes tend to be short-lived, and to reflect the rhetoric but not the reality of the innovation.

A perceived element of choice or potential adaptability of the suggested change to user needs and preferences is of great value in creating a spirit of willingness and support. For example, even changes that are mandated by a state or local education agency, or encouraged through federal incentive programs, stand a better chance of acceptance if they are not presented to potential participants as unalterable. Rogers (1969) stresses that:

> ...changes and innovations which are decided upon... are likely to be implemented in practice, because they are self-chosen. It has been a familiar complaint that new ideas in teaching, in curriculum, in methods, are literally "a dime a dozen," but that they tend to be resisted by teachers and administrators. But when individuals have chosen to try some of these new ideas, the outcome is quite different (p. 312).

When discussing the importance of user choice and program adaptability, Fullan (1975) recommends that:

> ...in situations where the innovation is already selected or will be selected by a small group of users for political reasons (i.e., in situations where the adoption decision excludes user participation) eventual users should be heavily involved

> in the planning for implementation stage (i.e., post-adoption but pre-use activities) in order to decide on the nature of the innovation and the appropriate implementation strategies. This is particularly important for creating the 'capacity to use' the innovation as wel as for increasing the 'commitment to use it' (p. 116).

Orientation to Program

Program orientation is an important means of generating support for educational change. Orientation activities prepare potential participants in and recipients of a new program to make more informed decisions regarding the proposed innovation. The audience for orientation activities within a district may include teachers, administrators, support personnel, pupils, parents and other members of the community. Orientation information may be provided through newsletters, newspapers, radio, television, meetings and conferences, audiovisual presentations, and demonstrations -- all designed to promote awareness and understanding of CBE-type programs (Colyer, 1976).

Pincus (1974) identifies the informing and cooperative planning functions included in orientation activities as major contributors to the eventual fate of innovation efforts. Examining instances of innovation barriers, he cites Fullan:

> An important causal factor seems to be a lack of communication between sponsors of innovation and the ultimate users -- students, parents and teachers -- which tends to work against significant change at the user level (p. 126).

The potential dividends of carefully planned and sequenced involvement in CBE orientation activities are suggested by Woditsch:

> There are all sorts of audiences that must be apprised of and involved with the institutionalization of CBE. But if you want the teachers and school administrators working for you, explore its consequences with them first. Involve all of the appropriate audiences -- parents, students, etc. -- as soon as you seek to design and implement, but familiarize school staffs first. CBE themes reach to the very roots of educational professionalism, and educators like to trace those roots themselves before others do it (Woditsch, Personal Communication, 1976).

Six basic techniques for bringing an innovation in education to the attention of practitioners have been identified by Guba (1967): telling, showing, helping, involving, training, and intervening. Guba distinguishes between helping and intervening on the basis of how and why the change agent, or innovator, first becomes involved. Direct involvement of the change agent on the potential adopter's terms is characterized as helping. Involvement on the change agent's terms is characterized as intervening. The six techniques are not discrete, and may be combined to promote favorable consideration of the innovation.

Lasser and Elam (1974), in a discussion of various orientation activities conducted prior to the field testing of comprehensive, exportable instructional programs,[1] observe that:

> ...it is desirable for administrators to conduct program orientation sessions for classroom teachers and to allow teachers to participate in decisionmaking regarding program adoption or field

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[1] The authors define such programs as having the following characteristics: explicitly stated outcomes, classroom-validated materials and procedures for promoting those outcomes, outcomes-referenced assessment, and materials and procedures for providing supplementary instruction.

> testing. Teachers who are consulted regarding program use are generally...supportive when new programs are introduced. A teacher whose opinion is typically sought regarding program adoption may more frequently try to make a newly installed program "work" even when he or she did not recommend adoption of that particular program. Further, teachers who are consulted prior to district or school commitment to a program are aware of any conditions of program use (e.g., data collection requirements for programs under development), and are more likely to conscientiously satisfy those conditions during field testing (p. 2).

In addition to the importance of orientation activities for staff and students considering the introduction of CBE, Huff (1976) notes a need for special attention to ongoing orientation for new staff and students. She observes that "considerably more time and attention [has been found necessary for] orientation in CBE programs than in more traditional programs" (p. 12).

Utopic and pragmatic models of change advocacy are described by Gallaher (1965). The utopic model assumes that change is best facilitated by planning for people rather than planning with them. The pragmatic model defines the change advocate's role as one of creating a climate conducive to acceptance. Gallaher summarizes the desirability of the latter approach:

> I believe it is best because it is based on complete and detailed knowledge of the target system ...There is...a large body of research to support the basic assumptions underlying the pragmatic model, that is that people will more readily accept innovations that they can understand and perceive as relevant, and secondly, that they have had a hand in planning (pp. 41-42).

Gallaher suggests that within the pragmatic model, change advocates are more likely to be successful if potential

adopters perceive them as prestigious. However, even tentatively determining which individuals or groups are likely to have prestige, or the capability to influence others in a given educational setting, may be a difficult and dubious task.

Such determinations are nevertheless implicitly hypothesized when change advocates are selected or when advocacy functions are assumed. When program support by specific individuals can be planned in the design of systematic installation strategies, those strategies then can be tested, and confirmed or revised.

EVIDENCE OF SUPPORT

Evidence of support and interest can be critical in motivating potential participants to consider and to try out a new instructional program or system (Ansaldo, 1976; Taylor, 1976; Lasser and Elam, 1974). Administrators, peers, and authorities within the profession are among the individuals from whom such testimony may be desirable.

(a) Administrator Approval

Rogers (1965) emphasizes "the crucial role of school administrators in causing a school to be more or less innovative..." (p. 61). Summarizing research findings supportive of adminstrator involvement, Rogers cites Demeter:

> Building principals are key figures in the process. Where they are both aware of and sympathetic to an innovation, it tends to prosper. Where they are ignorant of its existence, or apathetic if not hostile, it tends to remain outside the bloodstream of

the school (Rogers, 1965, p. 61).

A similar view regarding the importance of active superintendent involvement is expressed by House (1976):

> The superintendent [and his top staff] play a key role in introducing innovations into their districts...The superintendent acts as a carrier, a catalyst, and a gatekeeper for new ideas...(p. 338).

Kapfer, et al. (1970) describe the introduction and implementation of "a life-internship instructional program" in a southwestern urban school. Many characteristics of the program are similar to those of competency based education programs. They discuss the active role of the principal in demonstrating support for the new program and in coordinating and monitoring its implementation.

> Contrary to current worries by some educators that the principal is doomed to replacement by a business manager, the role changes that have occurred...have made the principal's role as educational manager and instructional leader much more critical than ever to the successful operation of the school (p. 22).

The critical role of school principals in the effective operation of the League of Cooperating Schools is emphasized by Goodlad (1967):

> It is the school principal who is the link between the League as an entity and the participating school...he carries word of ongoing League activities to his school and vice versa, he provides leadership to his faculty in regard to League activities, and he conveys League-centered business to fellow principals and educators in the total

> district. Clearly, the investment in the school principal is a substantial one. In essence, as they go, so goes the League -- and so goes the change process (p. 2).

McLaughlin (1975), in a report of a study of change agents conducted by the Rand Corporation, notes that:

> The receptivity of the institutional setting to a proposed innovation varied greatly among the projects we examined -- from active support to indifference to hostility...In particular, the attitudes and interest of central administrators in effect provide a "signal" to project participants as to how seriously they should take project goals and how hard they should work to achieve them (p. 3).

In considering some possible consequences of superintendent intervention in introducing an innovation in education, Miles (1965) articulates four possible roles that might be assumed by the superintendent: content initiator, process initiator, mediator, and squasher. As content initiator, the superintendent asserts positive support for a given innovation. As process initiator, the superintendent sets plans in motion -- establishing a structure that will facilitate examination and cooperative planning related to the innovation.

As mediator, the superintendent promotes the active involvement of potential participants in the planning prrocess, but is less active personally in such planning activities. As squasher, the superintendent impedes the introduction of an innovation by indicating skepticism or some other

negative reaction to the potential change.

These four roles do not lend themselves to mechanical assumption by an administrator, nor is each role necessarily available to all administrators. Some may be inconsistent with a given individual or organizational style. In addition, the sub-tasks or sub-changes that may be conceptualized within the scope of a given change in education may suggest the desirability of sequenced, differential assumption of administrator advocacy approaches.

For example, the superintendent might assume the role of content initiator to introduce the concept of CBE and to promote congenial staff perceptions of the innovation. At subsequent stages of program planning, however, the superintendent might assume the role of mediator, or facilitator.

The degree to which the administrator's overall effectiveness might be compromised through the active advocacy of CBE is another factor in the implementation strategy equation. The superintendent serves many audiences, some with apparently conflicting demands. Because the function of the top district administrator often serves balancing purposes, many superintendents may view the process initiator role

as impracticable. Gallaher (1965) references Spindler in this regard:

> [The administrator's] job is in large part that of maintaining a working equilibrium of at best antagonistically cooperative forces. This is one of the reasons why school administrators are rarely outspoken protagonists of a consistent and vigorously profiled point of view (p. 50).

As with other installation considerations, decisions regarding the manner in which administrative support of CBE should be communicated require attention to a complex interplay of district-specific variables. In Wilson's words (1965), the superintendent "needs to be a good guesser" (p. 84).

(b) Peer Approval

The approval of peer elites as a determinant of innovation is cited by Pincus (1974) in regard to influencing administrator perception of a given innovation.

> When key figures in the bureaucracy and their colleagues in other educational bureaucracies can agree about the acceptability of the innovation [the circumstance is favorable to innovation] (p. 20).

Rogers (1969), in a discussion of intensive workshop experiences for teachers, indicates that the single most important determinant of individual registration is the observation of significant changes in acquaintances who were

previous workshop participants. Rogers adds that early in the introduction of the group experience he had no expectations of reaching every teacher or faculty member directly.

> It is quite sufficient that any participant will have peers with whom he or she can share experiences growing out of the intensive workshop. Since many of the teachers' superiors will also have had such growing experiences, the faculty member will be going back into a school environment which will be essentially responsive to any changes in his behavior, attitudes, purposes, and relationships (p. 312).

House (1976) observes that "the people superintendents find most credible as sources of information about innovation are other superintendents" (p. 338), and Taylor (1976) emphasizes the persuasiveness of positive teacher support in generating attitudes of acceptance among fellow teachers.

(c) Authority Approval

The endorsement of an innovation in education by authorities within the profession may help to create a climate of acceptance among potential adopters. In discussing the successful wide scale implementation of several innovations within the past ten years, Pincus notes that each program was "widely publicized and praised by professional education groups..." (p. 123).

Ansaldo (1976) observes that an important

> criterion for the adoption of commercially developed curriculum materials has traditionally been the direct or indirect endorsement of established authorities or recognized experts. For example, textbook adoption committees have generally been interested in information regarding the contributing authors and consultants to textbook series. She also notes that, in regard to comprehensive, classroom validated instructional programs developed through the coordinated efforts of research and development teams, potential school users often seek information about the "experts" who have served as consultants or reviewers during development.

BROAD STAFF INVOLVEMENT IN ORIENTATION AND PLANNING

Orientation and planning activities preliminary to the introduction of the life internship curriculum described by Kapfer (1970) involve the active participation of school staff, parents, and other community members. Colyer's (1976) discussion of CBE program implementation at Oklahoma City University emphasizes the sense of ownership that developed from broad representation in orientation and planning.

> One of our strategies at OCU for involving faculty, students, administrators, and alumni on the grassroots level of planning the competency based degree program was to involve members in each of these groups in five seminars which had the task of stating competency outcomes for the university... Each [seminar] generated an enormous amount of concern over education...[and] a reinvestment in the best way to teach. The result...was to cause

> persons to want to participate more fully and to want to do a more professional job. (Colyer, Personal Communication, 1976).

Regarding open participation in district planning activities, Colyer suggests that meetings intitially directed toward identification of general educational goals provide entree to the examination of CBE as a useful vehicle for goal attainment.

> School level meetings for teachers, students, parents, and administrators...[are] highly useful in getting input from these groups on what they expect a good education system to deliver. Once outcomes...have been named, you [are] in a good position to suggest ways that CBE can help deliver these outcomes and expectations. After the program is underway, it [is] useful to continue [regularly scheduled] meetings...to update faculty, parents, and other interested members of the community on what is taking place in the new CBE program, and again elicit their feedback and input. [These] meetings contribute to the strengthening of an open structure...one of the elements...[of] an effective CBE program (Colyer, personal communication, 1976).

Bassi and Watson (1974) stress the importance of active staff planning and involvement in contributing to the institutionalization of innovations. Their interviews with a broad representation of Title III project staff suggest that these functionaries regard such involvement as critical to:

> ...effecting a positive attitude toward change and a ...[commitment]...to the resources needed and planning necessary for carrying out project objectives (p. 10).

The experience of the Toledo diocesan school system in formulating and installing a competency based education model is described by Lawrence (1975). Staff, community, and subject matter specialists participated in and contributed to

orientation and planning activities. The curriculum guidelines and pupil learning goals that resulted from this cooperative effort were treated as planning documents by teachers.

> The specific classroom curriculum plan...allowed the teacher to take the objectives, activities, and resources in the guide and adapt them to the specific requirements of the intended instruction...the systematic gearing up for curriculum change allowed the teacher to determine the appropriateness of districtwide objectives, activities and evaluation (p. 4).

ACCOMMODATING DIFFERENTIAL INFORMATION NEEDS

In planning and providing CBE program orientation activities, it is desirable to tentatively determine the different information needs of various relevant audiences (Taylor, 1976). In making such a determination, information regarding the present functions or roles of various individuals is important. Similarly, the projected impact of CBE on those roles and functions is important in defining both initial information needs and those likely to emerge at successive stages of program implementation.

In summarizing the effects of introducing a structured, outcome-based reading program into a kindergarten curriculum which previously offered no reading instruction, Lasser and Elam (1974) note that it is not only the kindergarten teachers who will have need-to-know requirements.

> Teachers who will receive pupils for instruction the year after the pupils have participated in a new program should also be oriented to that program. For example, if a school is introducing a new kindergarten reading program, use of that program has implications for the subsequent first-grade instruction of pupils. First-grade teachers whose curricula would be affected by the program should, at the very least, be

> familiarized with its instructional features and learning outcomes. This enables the teachers to plan appropriate adjustments in their first-grade reading and related communication skills instruction -- adjustments that accommodate each pupil's reading skills (p. 2).

The authors also discuss some dividends of community orientation, and the types of information that have proven valuable to such groups.

> Community members are a particularly timely target group, as they share increasing responsibility with educators for curricular planning and decisionmaking...Community groups benefit from information and discussion regarding important characteristics of effective instruction. Examples of classroom activities...that may seem appealing but do not appear to efficiently promote pupil learning might also be discussed. [The criteria emerging from such discussions] provide a meaningful basis for both program selection and classroom observation activities ...Such information facilitates sound curricular decisionmaking and increases the probability that appropriate criteria will be applied to several aspects of program evaluation. In addition, better informed community members can contribute instructional and attitudinal support during the critical period of program installation (1974, pp. 3-4).

Guba (1968) suggests that some information needs may be determined by the assumptions one makes concerning the nature of the intended audience.

> The potential adopter may be viewed (a) as a <u>rational</u> entity who can be <u>convinced</u> on the basis of hard data and logical argument of the utility of proposed innovation; (b) as an <u>untrained</u> entity who can be <u>taught</u> to perform in relation to the innovation; (c) as a psychological entity who can be persuaded; (d) as an <u>economic</u> entity who can be <u>compensated</u> or <u>deprived</u>; (e) as a political entity who can be <u>influenced</u>; (f) as a member of a <u>bureaucratic system</u> who can be

compelled; (g) as a member of a profession who can be professionally obligated (p. 293).

Though the approaches suggested by Guba are not given operational definition, assumptions regarding the nature of the adopter need not be based on hypothesized underlying states, nor need they place potential adopters into rigid, mutually exclusive categories. Guba's categories may serve as organizers and as a check against some general types of information that might be provided during program orientation.

Another approach to analyzing and accommodating differential information needs has been suggested by Hall and his colleagues (1976). They propose level-of-use categories ranging from no knowledge of the innovation to sophisticated understanding and use of it. The level-of-use framework developed by Hall is presented in Appendix A.

Viewing CBE implementation as a developmental phenomenon, and recognizing that information needs may differ not only among functional groups but also within a given group, increases the potential complexity of orientation activities exponentially. At the same time, careful attention to different information requirements can be a powerful tool in sustaining planning and development of orientation activities. A framework such as Hall's permits systematic examination of the prevailing uncertainty related to program orientation functions. The framework also suggests program evaluation techniques, including examination of various orientation

activities as antecedent variables that may "facilitate... use of an innovation while minimizing the trauma of change" (Hall, 1976, p. 56).

Program Information

The planning and provision of CBE program information requires a thorough understanding of the innovation on the part of the change agents.

> There is no question that an adoption agent must know what he is talking about. Preferably, he must have experienced the innovation in the trenches as an adopter. Lacking this he must learn vicariously from the experience of others. There is no substitute for knowledge, however. One cannot bluff his way through an adoption interaction with users; to do so is to court disaster. (Hall & Jones, 1976, p. 262).

During initial CBE orientation, various audiences can benefit from basic information covering the program effectiveness, training requirements, resource requirements, and when appropriate, the history and projected future of development.

PROGRAM DEFINITION AND OBJECTIVES

Information on any proposed innovation in education should be communicated to relevant audiences clearly and unambiguously. Even when support for change in education is apparently widespread, its implementation may be unsuccessful because audiences do not clearly understand objectives or methods attendant to the innovation (Pincus, 1972). Gross and his colleagues observed implementation efforts that were undertaken by teachers in good faith and with seriousness of

purpose, and identified the obstacles to those attempts.

> One barrier that blocked the teachers' efforts to implement the innovation throughout the six-month period was their lack of clarity about the new role model. Our observations of teachers indicated that most of them did not have a clear image of the role performance expected of them. Our formal interviews...revealed that the teachers never had a clear understanding of the innovation (1971, p. 196).

Information for potential users regarding program definition should address specific characteristics of the innovation. When misinterpretation or misunderstanding may be anticipated, characteristics that are not implied by the innovation or required by the change agent should be addressed as well.

Competency based education may be variously defined by different adopting agencies, each definition being consistent with a general, simplified set of CBE characteristics. The wide range of potential phenotypic variations in CBE applications is implied by Hersh, Mallan, and Welton (1976), in a discussion of content considerations related to competency based teacher education.

> CBTE <u>is not a Program</u> (and as such is not transferable from place to place). (It is not a <u>model</u> program, or even <u>the</u> program). Rather, CBTE is a process, a strategy for raising a variety of hypotheses about teacher training and a means for testing those hypotheses..." (p. 100).

Woditsch (1976) emphasizes the value of introducing and defining CBE in a manner that encourages adaptation and embellishment by potential participants. He suggests treating CBE as "a wise and sympathetic colleague to what is sound in current practice," rather than as a radical departure from such

practice. Woditsch sees:

> CBE's emphasis on explicitness [as] not so revolutionary as reconstructionist. It is unique in that it amplifies and strengthens what has grown weak in educational practice. It does not propose unprecendented new educational objectives or techniques. If it did, it would be "like" countless other approaches to educational reform and innovation. Consequently, it should not be prefigured as a new "contestant" for educational dominance ...CBE is...better seen as a way of marshalling largely <u>obvious</u> techniques (objective-setting, assessment, feedback, etc.) in order to keep the central issues central, and educators at work on them (Personal communication, 1976).

The specific CBE characteristics adopted by members of a given education unit may usefully be considered idiosyncratic embellishments on the general CBE theme. When certain program specifics are defined in advance by or for the adopting agency, they can be clearly communicated to program participants, thereby lessening the risk that implementation will founder because of misunderstanding or misinterpretation of those program features.

The "dilemma of explicitness" regarding the introduction of an innovation in education has been discussed by Fullan (1975). This dilemma is suggested by earlier discussions in this document -- for example, on the one hand, it appears desirable to treat implementation as an adaptive process in which program goals and procedures are determined cooperatively by developers and users; on the other hand, it appears desirable to explicate program characteristics for potential users, to facilitate implementation and evaluation of the innovation. Fullan suggests the following guidelines for

dealing with this dilemma (which he acknowledges can never be fully resolved):

- o Developers or other sponsors of innovations should not be the only ones responsible for specifying the implementation characteristic of the innovation, nor should these characteristics be fully specified a priori...;
- o (Despite the guideline noted above,) developers and other sponsors of innovations would provide considerable clarity if they attempted some detailed specification of the innovation;
- o Users of an innovation will develop some effective specification of it based on their more detailed knowledge of the situation, but we have to distinguish between non-use or superficial use, and effective adaptations;
- o (Following the guidelines noted immediately above,) some idea of the range of standardized structural and behavioral specification is necessary if the innovation is to be implemented in ways consistent with its basic principles. In light of the previous points the process of implementation would involve interaction between developers and users with the intent of deliberately and continuously specifying the innovation (pp. 70-71).

PROGRAM EFFECTIVENESS

To the extent that CBE -- as defined by potential users -- has specific characteristics consistent with operating programs, available data on program effectiveness should be useful in making decisions about program adoption. For example, performance data on previous program operations may provide information on the degree to which stated outcomes were attained in a range of school settings. Such data may assist potential users in making tentative judgments regarding the effectiveness of the broad CBE planning and management system characteristics under consideration. Unless the specific instructional outcomes and the specific instructional strategies and materials used in an earlier program are also

education unit, however, the potential user is not assisted in making projections about the effectiveness of different instructional approaches that may be introduced to promote unique local objectives.

In summarizing the CBE implementation experiences of the Toledo Public Schools and the Toledo Diocesan Schools, Utz and co-workers (1974) emphasize the value of pupil performance data in promoting new implementation efforts as well as refining ongoing efforts. Such data, they feel, facilitate judgments regarding the relevance of stated outcomes, and the effectiveness of specific, replicable instructional interventions (materials or procedures) in promoting those outcomes.

Empirical pupil performance data resulting from the widescale use of extant instructional materials, products or replicable procedures to promote CBE program outcomes should facilitate sound selection decisions. Niedermeyer and Moncrief (1974) discuss program information which can be valuable to school decisionmakers when considering the use of commercially available instructional programs.

> Primary criteria for determining the effectiveness of an instructional program are data resulting from assessment of the program's stated outcomes. These data should clearly indicate the contribution of the instructional program in promoting the outcomes (i.e., baseline data and control groups). They should be straightforward and interpretable, so that a statistician is not required to evaluate their credibility (pp. 6-7).

In addition to pupil performance information, anecdotal data and user reactions are important sources of information

for potential adopters. The reactions of previous users to CBE applications, along with information regarding the specific characteristics of those applications, should facilitate more informed decisions regarding CBE adoption or adaptation.

When such user information is quantified, or is balanced for representativeness, potential adopters can better estimate the predictability of a particular user response. Niedermeyer and Moncrief (1974) note the too common tendency of publishers to:

> ...rely on a few carefully chosen testimonials to substantiate the credibility of a program. While such testimonials are invariably positive, they may not be representative of the majority of users. Quantitative data should be presented when reporting the [satisfaction users have within a program] (1974, p. 6).

Data on a program's cost effectiveness should also assist potential users in making enlightened adoption decisions. Schalock's (1976) documentation of Competency Based Teacher Education implementation at the Oregon College of Education provides useful information regaridng cost effectiveness, and serves as a model for collecting, analyzing, and reporting data for internal program evaluation and for communication to the broad education community.

TRAINING REQUIREMENTS

Potential users of CBE may need training to develop appropriate understanding or skills; in such cases, they may find information regarding training requirements helpful (Utz, et al., 1974). That information might address such

questions as the following:

- o What staff members will receive training?
- o What staff members (if any) will have responsibility for conducting training?
- o What materials and equipment will be required?
- o How much time will be required?
- o When (e.g., before school, after school, during release time) will training be conducted?
- o Over how long a period of program installation will training extend?
- o What existing teacher skills will training assume?
- o What teacher skills will training be designed to promote?
- o In addition to staff time, what training costs can be projected?
- o What mechanisms are provided for teacher participation in the formulation of training plans?

RESOURCE REQUIREMENTS

Program information might also address resource requirements that accompany the installation of an innovation in education (O'Hare, et al., 1972). Information regarding resource requirements might answer such questions as the following:

- o What does the proposed program require in terms of human and material resources?
- o What does the program require in terms of a configuration or allocation of resources different from what currently exists in the adopting unit?

- Does the program provide opportunity and mechanisms for using previously untapped available resources?

Observation of External Programs

Program orientation activities can frequently be supplemented by providing potential participants an opportunity to observe the operation of the proposed innovation at existing sites (Taylor, 1976, McLaughlin, 1975). Baird and Belt (1973) cite the operation of ongoing CBTE programs as a significant resource for new CBE program planning and staff orientation activities.

Visits to selected schools in four states provided district personnel with information and experience helpful in formulating and refining specifications for the experimental Life Internship Curriculum in the Clark County, Nevada, School District (Kapfer, et al., 1970). After the new curriculum had been installed in the district's experimental school, that school functioned as a demonstration site for interested educators from the broad education community as well as those within the district.

The organization and monitoring of five program demonstration sites is described by O'Hare, Lasser, and Bossing (1972). The sites, called Information Resource Centers, provide a means, (a) of informing the education community about a new research-based instructional program that has been extensively field tested, and (b) for developing generalizable installation procedures for research-based instructional

products.

In addition to guidelines for demonstration site organization, the authors present empirical data regarding the advantages and costs of demonstration site operation.

> Let us consider first the "benefits" of the sites. They did function well in further informing the educational community about the program. The participating districts and the broader school and higher eduction communities all found the demonstration sites useful...The data generated in connection with establishing and operating the sites provide the basis for developing...installation procedures that will make it possible to accomplish "visiting" functions for research-based products while avoiding the costs of treating the functions as separately costed projects. The format procedures used...were carefully designed to be generalizable. Using these prototype materials it is now feasible to develop a component for an instructional program that will permit each local education agency to establish its own [demonstration center] (O'Hare, et al., 1972, pp. 33-34).

SIMULATIONS AT CONVENTIONS/CONFERENCES

Conventions and conferences sponsored by professional associations provide conference attendants an opportunity to observe and participate in program or procedure simulations and workshops. To the extent that such simulations or workshops address CBE-relevant procedures (e.g., providing instruction directed toward specific outcomes, inferring competencies from demonstrated performance, providing appropriate instructional activities, etc.) potential users may observe or even try out procedures that are under consideration before trying them in their own districts. They also have the opportunity to discuss aspects of program operation with individuals who have experienced or implemented them in school settings.

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Short-term installations that permit individual teachers to try out various aspects of CBE in an experimental context are recommended by Taylor (1976). The tentative nature of experimentation often contributes to the ultimate success of the innovation. That is, participants may be more inclined to give the innovation a fair trial if they perceive it as experimental, and feel that they will have a voice in subsequent decisions regarding its adoption or adaptation.

Generating Support: A Retrospective View

Techniques discussed in preceding sections relate to the broad issue of generating program support. The discussion has addressed potential problems as well as payoffs attending various support generation techniques. Although such a discussion is not intended to be directive, it should suggest possible direction -- options for facilitating the installation of competency based education.

The weaving of specific techniques into an overall design for CBE installation is of necessity a creative and self-conscious activity. To attempt to prepare installation fabric for off-the-rack consumption is to deny the consumer the fun as well as the fit of self-tailoring.

To the extent that the techniques described in this paper represent tested options, they deserve consideration by agencies or individuals contemplating the introduction of a change in education. To the extent that they were

demonstrated effective in introducing innovations similar to those being considered locally, generalizations may be particularly apt.

Personalization is the very critical requirement in making any installation generalization work. It is the process of taking useful information about what has happened many times to many people, or sometimes to some people, or rarely...and adding information about what is unique about your circumstance, your place, your people. It is what Herb Gardner means by having "the good eye" (1962), and what James Wilson (1965) means by being a "good guesser." It is knowing what makes you, institutionally and individually, special.

The preceding discussion of techniques for generating program support reflects such a respect for user personalization. Subsequent sections of this paper, which deal with resource utilization and scope of program implementation attempt to maintain that spirit.

Resource Utilization

The effective use of available resources is particularly critical during a period of major change in schooling. An appropriate balance between a perceived need and the availability of resources to meet that need promotes staff commitment and facilitates personal contribution to the organization. In a discussion of resource utilization Miles (1965) observes that in "healthy" organizations

> The fit between people's own dispositions and the role demands of the system is good. Beyond this, people feel

> reasonably 'self-actualized'; they not only 'feel good' in their jobs, but they have a genuine sense of learning, growing, and developing as persons in the process of making their organizational contribution (p. 19).

In the following discussion, considerations of human and material resource utilization are addressed. Attention to such considerations should prove useful in formulating a CBE implementation plan.

Human Resource Utilization

THE SOCIAL ORGANIZER

A "social organizer" (House 1976) -- (also known as "program manager" (Hall, 1976), "change agent" (Rogers, 1962) or "entrepreneur" (House, 1974) is considered by some to be essential to impelmenting major change. The social organizer assumes or shares responsibility for advocating and managing the introduction of change.

Within the school district organization, a superintendent, program director, support staff member, curriculum director, principal or teacher may function as a social organizer. The identification of someone to fill this role should be guided by careful consideration of the personality characteristics as well as the ability and experience of those available for the position (House, 1976).

High on the list of desirable general skills for social organizers is the range of their authority and responsibility within the group they wish to influence. Social organizers concerned with promoting CBE implementation will, of course, find a comprehensive knowledge of competency

based education advantageous in providng support to both policy makers and practitioners. For example, they may need to conceptualize operational models of CBE, and to discuss the history, the rationale, and the possible consequences of implementing CBE-type programs. They should be prepared to provide CBE-related information to all decisionmakers, and to answer major conceptual questions. It would be desirable to possess a familiarity with CBE position papers, major policy decisions related to CBE, and the development of CBE implementation plans. Frequently, social organizers will make inquiries outside the immediate organization to secure adequate answers or resources; thus the ability to establish liaison with available resource agencies is also desirable.

It is sometimes considered appropriate to introduce organizers from outside the organization in leadership roles as well as in support roles (Goodlad, 1967, 1968). Professional consultants, specialists from other agencies such as intermediate education districts or state departments of education and publishers' representatives may help facilitate CBE installation. Because the time allocated to such outside agents is generally limited, it is important that they interact directly with the administrators and staff members who will initiate implementation efforts. As school personnel gain expertise in CBE, they can formulate specific models and procedures to meet local needs.

Outside agents can provide training in conceptual development, and can facilitate the implementation of CBE. They can help establish liaison with other districts

attempting similar activities. Gradually districts will rely more heavily on their own skills and those of neighboring districts.

Evidence from numerous studies reveal that most individuals consider outside agents less credible or helpful than their professional peers or internal agents (Rogers, 1962). This suggests that outside agents may be most valuable during the early stages of development, and that their utility will diminish as local expertise and experience increase (Rogers, 1962; Goodlad, 1967). McLaughlin (1975) notes that where outside agents were considered useful in classroom organization projects, their involvement was direct and concrete, and included working with teachers in their classrooms and in "hands-on" workshops. Abstract theorizing and interpersonal distancing, then, both tend to decrease the likelihood that the outside agent will be effective in stimulating program implementation.

The credibility of an outside agent depends in part upon the political environment and the nature of any previous relationships between that agent and the local school or district being served. Rogers (1962) suggests that over a period of time, outside change agents can become highly respected and gain significant influence. He also suggests that outside agents who are perceived as peers rather than as disseminators are more likely to influence adoption of a process, product or idea.

Social organizers who are knowledgable and sensitive to dynamics of change can anticipate problems that users are

likely to experience. Hall (1976) calls this anticipation activity manipulation. He suggests that

> manipulation strategies used by internal agents are more likely to be of a type that will ensure development of ongoing relationships among users that... can [be monitored] on a day-to-day basis. The external agent is more likely to manipulate users as resources to one another (p. 262).

In summary, effective social organizers should be knowledgable regarding the desired innovation able to coordinate available resources to facilitate program exploration, decisionmaiking, and training, and able to identify and arrange for the use of extra-organization resources, when appropriate. In addition, social organizers, like others seeking to influence and support other people, need to be liked by the "social" beings they are attempting to "organize."

Additional human resource considerations important in implementing CBE are discussed in the following subsections.

ADVOCACY GROUPS

"The successful implementation of an innovation ultimately depends on whether an internal advocacy group is formed around it" (House, 1976, p. 338). An advocacy group is usually a small group that forms spontaneously to keep an innovation alive. Taylor (1976) provides an example of such a group: Active supporters at Rainier Beach High School in Seattle viewed their performance-based instructional program as valuable both to the school and to themselves. They fought hard for resources and public support. Taylor suggests that the innovation survived primarily because of the group's persistent effort, even during hard times.

House (1976) concurs with Taylor: "The advocacy group provides the real work energy on which the innovation lives" (p. 338). House also suggests that a strong advocacy group is important during times of challenge and economic difficulty. When an innovation is strongly supported, needed resources can usually be found.

Taylor indicates that the performance-based instruction advocacy group at Rainier Beach were able to secure outside funds, gain local publicity, disseminate and share materials with schools in the United States, Canada, and Europe, and publish articles in national education publications. Members of the advocacy group received incentives through promotion, public recognition, release time for program development work and opportunities to share their work at national conferences. Such advocacy group incentives may work to enhance or to retard the acceptance and implementation of an innovation in schooling. For example, House (1976) notes that:

> If the advocacy group is successful in competing for resources, others in the district are naturally opposed. To the extent that the advocates absorb money and promotions, there is less available for everyone else. A counter group almost always forms, comprised of those who are excluded from the innovation (p. 339).

Members of the counter group may concentrate on weak or potentially threatening aspects of CBE, finding it consistent with their interests to resist its implementation. Pincus' (1972) suggestion that the schools will tend to resist innovations which may disrupt existing bureaucratic structures

also suggests a potential source of opposition to CBE.

Hall and Jones (1976), when discussing competency based teacher education suggest the following:

> When beginning an experimental CBE program, be sure to begin with a staff of interested and willing people...Be warned, however, that small dedicated groups can be a hazard to the growth and spread of the program in your situation if they are not open to new people (p. 250).

Open communication and freedom of participation in advocacy groups is important to the smooth implementation of CBE, or of any innovation in schooling.

Advocacy groups can serve many functions and can exist in many forms. Pellegrin (1975) describes a small ad hoc group of administrators and specialists that formed during an early planning phase of program implementation, remained intact, and developed the basic precepts of a major project in differentiated staffing. Taylor (1976) describes another advocacy group which formed only as a result of district level initiative to stimulate interest.

Goodlad (1975) discusses the League of Cooperating Schools, an organization which assumes many functions of an advocacy group, but at a higher administrative level. In Goodlad's model for change, the individual school is the change agent, and the school principal is the responsible leader. The League provides a forum within which principals of cooperating schools can share ideas and solve problems. It takes effort to establish an environment within which persons feel confident enough to take risk and to initiate changes. Goodlad (1967) references Guba in this regard:

> "Generally speaking, the bureaucratic structure of existing agencies will not allow for the factors of high risk-taking, sanctioned freedom to fail, and delayed gratification which will be required to attack meaningfully the conceptual, personnel and organizational impediments to effective planned change in education" (p. 2).

The League offers districts one means of establishing and maintaining an environment conducive to change.

Schools considering the adoption of a CBE-related innovation need some means of dealing with the social and organizational factors identified by Guba. They must be able to combine and utilize internal and external resources to facilitate CBE exploration, planning and implementation. This may require modifications in present organizational operations (e.g., new staff positions, new or changed authority/responsibility structures, new reward systems) and new or changed institutional relationships (e.g., the League of Cooperating Schools, the consortia of schools, universities and community representatives).

Discussion of school services and procedures that may be important to support CBE implementation is presented in the following subsections. Program planners have found the services provided through training activities, program support staff and resource or material centers to be critical in promoting the implementation of innovations in schooling. Those services characterized by human resource support are discussed first.

Support Services

Colyer (1976) suggests it is important to give teachers a "hand hold" when beginning to implement CBE. Adequate supporting human resources she suggests, could provide the "lifeline" that makes change possible.

TRAINING AND FOLLOWUP

Intensive in-service training appears to be a critical ingredient of effective program implementation. Such training frequently provides teachers and other participants with demonstration models, "hands-on" practice, and psychological support and reinforcement (Fullan, 1975). It has been suggested that using a variety of training approaches increases responsiveness to the needs of participating individuals and to the requirements of the program (Taylor, 1976).

McLaughlin (1975) indicates that "one-shot" training or training provided only at the beginning of a new project or program is generally ineffective.

> Although such training designs have the virtue of efficiency and lower cost, they ignore the critical fact that project implementors cannot know what it is they need to know until project operations are well underway...there is just so much that a would-be implementor can be taught or can understand until problems have arisen in the course of project implementation and solutions must be devised. Similarly, it is difficult to anticipate in advance exactly what implementor needs might be at different points in project implementation. Training programs that attempt to be comprehensive and cover all contingencies at the outset are bound to miss their mark and also to be less than meaningful to project participants (p. 7).

Weikart and Banet (1976) express similar observations, based on the attempted training related to implementation of a Piagetian Follow Through model:

> To our embarrassment, we must admit that our assumptions about training five years ago were that (1) one could describe a "model" in largely verbal terms, with perhaps a few charts and diagrams; and that (2) this simple verbal description, presented before a gathering of teachers in a preservice workshop, should persuade them to modify radically their teaching behavior in the coming year.... We learned the hard way that these expectations were absurd...not surprisingly, our training began to be focused increasingly on concrete teaching strategies that put into practice our theoretical conceptions, and on concrete examples provided by classroom settings, either at the center or on film or videotape (pp. 129-130).

Many opportunities are being tapped for provision of CBE-related personnel development. Well established competency based teacher education programs (mandated in at least 20 states) are being implemented to various degrees in colleges and universities nationwide. Many of these programs can help provide appropriate preservice experiences useful to teachers who will be practicing in a CBE context. Preservice training in CBTE programs represents one point on what may be conceptualized as a CBE training continuum.

Some school districts also cooperate with teacher training institutions to provide in-school training experiences. Trainees are sometimes given employment as aides or intern teachers while completing their university preparation. Goodlad (1970) supports such extension of preservice training to school settings:

> Teacher-training programs must get off the college campuses into schools serving as teacher-education centers. On entry into such programs, future teachers must become members of teacher teams in collaborating schools and receive ascending stipends as they progress

> from minimal responsibility as aides to maximal responsibility as resident teachers (p. 425).

A subsequent point on the CBE training continuum is represented by provision of training for practicing teachers and administrators. While persons implementing CBE will present a broad array of training need, it is desirable that any in-service program be based on continuing assessment of specific, current faculty needs. The types of training required in the early stages of implementation can be quite different from that required as implementation progresses.

In identifying major barriers to the implementation of an innovation, Gross et al. (1971) found that many serious problems arose very early because teachers lacked needed skills and knowledge. Practitioners need familiarity with new materials and methods, and they need an opportunity to consider and work on implementation plans before attempting to implement a major change. The timeline and scope of implementation should be consistent with that knowledge and experience. Gross found that inadequately prepared teachers often entered into an implementation effort with positive attitudes, but quickly lost their motivation as the frustration mounted.

Many structured models for aspects of CBE-related in-service training are available. One workshop is described by Olson (1974):

> The workshop is an attempt to provide teachers, administrators and teacher aides with an opportunity to become familiar with the concept and processes of individualized instruction. Unlike many earlier efforts, this workshop models all the characteristics of a good individualized program. The workshop facilitator functions as a teacher in the classroom.

> He defines the goals and objectives, adjusts the objectives for individual differences, provides alternative learning strategies for each participant, organizes the environment, interacts with the learners so that they achieve the objectives, evaluates progress toward the objectives, and helps participants decide on the next appropriate instructional steps (p. 41).

The functions outlined by Olson describe some probable characteristics of many CBE programs, and may be appropriate for consideration in planning in-service training programs.

Olson specifies diagnostic activity as one important aspect of the individualized instruction workshop. Participants have an opportunity to conduct an informal self-diagnosis, and they select the objectives that best meet their individual needs. Learners do not have to study something they already know or for which they do not feel ready. Since the workshop is flexible, the learner and facilitator frequently work out new objectives based on the learner's individual needs. Attaining these objectives often requires locating additional resources, or visiting an operational program in a nearby school.

An important component of the workshop, and of any staff development effort, is evaluation. Within the workshop, evaluation occurs during the small-group discussions that follow completion of each learning package. In the course of these sessions, learners share their concerns, ideas, and products with others who have worked on the same objectives. This type of evaluation is intended to be formative in nature. It provides excellent feedback to the facilitator, to help in determining the effectiveness of the instruction provided,

and to identify areas in which supplementary instruction may be desirable.

Utz (1974) suggests that "the necessary teacher in-servicing process should require teachers to build their own curriculum modules, thus creating a psychological investment for teacher implementation" (p. 8). Olson (1974) addresses this concern by asking workshop participants to prepare outcome statements, learning packages, or evaluation items germane to their classrooms. Upon returning to the classroom, participants use these materials with students and prepare a critique before returning to the next session. During that session, they share their work and critique with the facilitator, and then develop a final modified version.

Utz (1974) observes that teacher involvement in training is promoted additionally by some form of reward for in-service participation (p. 8). Olson (1974) identifies release time, in-service credit, public recognition, and free materials as rewards which encourage participation in the individualized instruction workshop. Such incentive considerations in planning program implementation are discussed in more detail in a subsequent subsection of this paper.

As teachers and administrators begin to implement CBE, they may benefit from an opportunity to learn required skills in an environment that models effective CBE program characteristics. For example, teachers might work toward stated or negotiated objectives at their own rate, using resources best suited to their personal learning styles.

Observing the elements of a total CBE system in operation gives participants one basis of comparison as they begin to implement a CBE program in their own schools.

Burns (1969) suggests that follow-up training (after an innovative program has been implemented) consist of:

> Frequent, but short, staff meetings. Only require those to attend who are directly involved in the agenda. Frequent meetings insure progress and provide for all phases of the project to come under observation. This prevents minor problems from growing into major problems and also insures that all problems receive immediate attention (p. 422).

Huff (1975) notes that new arrivals, or those joining the program after it has been initiated, may feel left out and be left out, unless follow-up training is provided on a regular basis.

The complex training needs related to CBE are best met by preservice and in-service training supported by the schools themselves if quality CBE programs are to be successfully implemented. Goodlad (1970) notes that:

> Training should be provided on company time and at company expense. Public schooling is one of the largest enterprises in the country that does not provide for systematic updating of skills of its employees and for payment of the costs involved (p. 425).

Training programs are needed for specialists in CBE program development and staff renewal. It has been suggested that comprehensive program development would benefit greatly if personnel trained in the complexities of CBE implementation were widely available throughout the educational community (Taylor, 1976). At least one such program to train general

change facilitators is under development at the Indiana University School of Education, Division of Instructional Systems Technology (Bhola, 1973).

Materials Resource Support

RESOURCE ROOMS AND MATERIALS CENTERS

The more aware a person functioning as social organizer is of available resources, the more helpful that person can be to teachers and administrators. Gross et al. (1971), Charters and Pellegrin (1973), and Crowther (1972), all cite the unavailability or inadequacy of required materials, equipment and resources as a major barrier to the implementation of an innovation.

"You need to have use of outside resources. You need to know how to tap consultants from institutions where things have already been done. Faculty need to be aware of materials that already exist" (Hall and Jones, p. 264).

Once identified, it is desirable that resources relevant to the innovation be made easily accessible to teachers and other intended staff. For example, related to CBE, a state office of education might develop a comprehensive index to all relevant CBE related materials, references, and even consultants or practitioners. That index could be published and disseminated to districts and schools for their use in selecting appropriate materials and identifying other relevant resources. Intermediate and larger districts might develop media support for staff training and for instructional use. It is particularly desirable that teachers and other school personnel have access to those CBE resources that have been found useful in CBE

classrooms. Some schools maintain an "in-house" collection of books and tapes related to new programs and procedures, for teacher use (Taylor, 1976). Such resources can be made accessible through an informal checkout system.

Some districts maintain a curriculum library in which they display instructional materials currently available from publishers and other schools or districts. Such a curriculum library is also a convenient place from which to disseminate materials developed by teachers and other staff within the district.

A district resource room or curriculum library might also display available collections of goals, objectives, and evaluation items. If it is impractical to display complete collections, it might be possible to provide services that facilitate retrieving items from extant collections.

PROGRAM SUPPORT STAFF NEEDS

Personal communication is a basic element of educational change. The implementation of competency based education-type programs frequently require major change, and the costs involved in ensuring adequate personal contact to promote that change can be great. Schools may attempt to minimize the expense by disseminating written materials or resorting to other, less personal types of communication. Although newsletters, articles, books, and sample materials can help communicate simple, routine information, personal contact is considered critical in many situations involving an element of

uncertainity -- for example, in problem solving, planning or negotiating sessions. The adequacy of personal, direct support provided by program staff at all levels (i.e., state, county, district and school) can have a major effect on the rate, scope and success of CBE implementation. Unless adequate support provisions are made, much of the burden of attempting to plan and implement CBE programs can fall on teachers alone.

The Oregon Department of Education (Hall, 1976) has developed a list of school personnel competencies which school districts specified as necessary for implementing the instructional portions of Oregon's Minimum Standards for Public Schools. The list is Oregon-specific and its elements do not all correspond directly or solely to the elements of CBE presented in the present document. It does, however, provide the Oregon Department of Education, colleges, universities, districts and schools in Oregon an opportunity to assess current staff competencies, staff development opportunities, and research and development plans. The list also provides a framework for determining whether school organizational characteristics are compatible with the personnel competencies suggested by the Minimum Standards.

Specialized personnel can be employed to provide support and assistance in the assumption of tasks such as outcome identification, needs assessment, program evaluation and information management (Pellegrin, 1975). Depending on the size and nature of the district or school, these and other functions may be supported by existing personnel. It is, of course, important not to superimpose CBE-type functions on the

existing administrative and instructional functions but rather, through accommodation and adaptation by staff, to design and implement a program that represents a set of consistent, complementary functions.

Freeing teachers from certain regular classroom responsibilities gives them an opportunity to develop the necessary skills and knowledge to evaluate and to participate in CBE planning and implementation. They not only learn from such involvement, but they also have a chance to influence program adoption and development, and they have the opportunity to gain a sense of commitment to, and ownership of, any new program that may be installed. Many CBE functions can be planned, implemented and facilitated by teachers who are given adequate training, release time and incentives.

INCENTIVES

Many schools have a highly restrictive reward structure, and offer few opportunities for professional advancement. Tenure and salary often depend primarily on years of experience. Teachers seeking such advancement often must leave the classroom in order to secure higher salary, status and recognition. Rewards available to those who remain in the classroom are quite limited.

The personal costs involved in implementing CBE-type programs, where they deviate significantly from prevailing instructional programs, are often high for all concerned. A great deal of time and energy are required to identify, plan, and assume the necessary new skills and roles. Unless implemen-

tation is carefully planned to include the provision of incentives, resistance to CBE may be high.

Intrinsic and extrinsic rewards may be considered in an implementation plan. House (1974) observes that:

> In examining high school reward structures, though not those directly related to innovation, Spock (1974) found that the "extrinsic" rewards varied. Intrinsic rewards -- pride of workmanship, positive social interaction with peers, and abiltiy to influence school policy -- are relatively more important in the overall reward structure. Whether the greater importance of intrinsic work and peer-related rewards is because of the preferences of teachers or because of the absence of variation in extrinsic rewards could not be determined. It is clear, however, that intrinsic rewards are important and that the more material extrinsic rewards are scarce(p. 74).

Carpenter-Huffman et al. (1974), in discussing social and behavioral barriers to and facilitators of change in performance contracting programs, note that:

> On the school side, the real incentives for trying to make the programs work were the professional, advantage of being associated with a successful highly visible program and the professional dedication of educators trying to find new solutions to the problems they faced (p. 166).

Miles (1965) discusses the invisibility of teacher role performance to peers or superiors, concluding that professionals are relatively detached from peer estimates of performance. He points out, however, that much satisfaction derives from intrinsic properties of the role. CBE may provide an opportunity for greater performance visibility via goal definition and program evaluation, thus affording a sound basis for providing extrinsic rewards for quality work.

Membership in an advocacy group provides an opportunity for both intrinsic and extrinsic rewards. For many, the

satisfaction of being a part of such an effort compensates for certain frustrations and for the time involved. In addition, group membership can provide more informal rewards, and can place members in an effective position to bargain for formal rewards. For example, gaining recognition for effective contributions in a CBE advocacy group can lead to "promotion" to positions of additional responsibility and financial rewards such as a unit leader or department chairperson, or to nomination to contract for work on summer or other extra-time, extra-pay projects.

Concrete rewards for group involvement have been described. Kapfer et al. (1970) discuss some:

> The strategy during the first year of the project was to utilize Title III funds for hiring substitute teachers for the purpose of freeing teachers for program development. The administrators worked closely with teachers who were freed for such activities. The plan...was to train the teachers in writing Individualized Learning Packages (p. 19).

When production was assessed, the process of using substitutes was determined to be inefficient. During the second year they chose to

> contract with teachers on a extra-time, extra-pay basis for program development. All teachers were informed of the opportunity that would be available during the summer to contract for specific program development (p. 20).

They also used the university:

> Teachers were also given the option of taking some or all of their pay in form of university credit through a workshop which the principal and project specialist conducted during the summer (p. 20).

In addition to individaul rewards, it is worthwhile to consider the need for program-oriented, group rewards and incentives. It appears that schools seldom reward program-level or cooperative development. In this regard, Yarger et al. (1975) observe that:

> ...possessiveness of ideas of programmatic efforts as well as a sense of isolation are natural outgrowths. Educational respectability is typically associated with the product, and the recognition an individual garners for his/her professional effort. Rarely are groups of people rewarded for developing a superior program. In fact, when a superior program emerges, one or two individuals are usually singled out for reward and recognition, thus creating unpleasant responses from others who contributed to the effort (p. 13).

It is important to be aware of the relationship between the personal cost involved in implementing CBE (e.g., time and energy requred to develop new skills) and the amont of resistance that may result. Because a reward system can compensate for personal costs, resistance may decrease and progress toward effective implementation may increase. Therefore, a school's or district's capability to identify, provide and control adequate incentives should be of prime consideration in determining the scope and rate of an implementation plan.

FEEDBACK

The provision of mechanisms for communication and feedback are also very important in preparing an implementation plan. This section presents a discussion of feedback related to the information needs of individuals affected by CBE-type programs.

Some goals of feedback systems often include --

- o Improving program implementation processes.
- o Improving program implementation management.
- o Improving program outcomes, or program effectiveness.

Developing an information feedback system involves --

- o Identifying the information needs of potential participants.
- o Identifying individuals who should provide and recieve the information.
- o Identifying methods of collecting and providing the information.

A very important guiding principle applicable to both the planning and operation of an information feedback system is emphasized by Hall and Jones (1976):

> Keep your plans open and on top of the table. Provide continuing opportunities for input and decisionmaking participation by staff...(p. 250).

It is appropriate to add the desirability of openness with the feedback to participating community groups, parent groups, professional groups, and funding agencies. Colyer (1976) describes a means of providing feedback to community participants:

> When one includes members of the community...in a meeting and solicits their suggestions...on ways they might contribute to the program, it is helpful to have these items written down by the person making the suggestion (which gives them confidence that their contribution is not going to be lost)... (A written synthesis can then be) printed and distributed to those...involved....(p. 6).

Hall et al.(1976) describe a feedback technique used in developing a competency based teacher education (CBTE) program:

> We know of a small staff cadre in one institution that is working on assumptions, competencies, and a prototype

> management system for a new CBTE program. Two department chairmen and an associate dean are among the other participating staff. Each time a task is accomplished such as the identification of a set of assumptions, a written version of the action, in proposal form, is sent to the total faculty and to student and school representatives. The information is set on ditto sheets for feedback. (The ditto format connotes something less final than mineographed or other more polished printing). Those who wish to provide input to the committee do so. Those who don't, can't say they were never given the opportunity (p. 251).

Discussing organizational health and the need for adequate communication processes, Miles (1965) suggests that it is essential to have "relatively distortion-free communication 'vertically,' 'horizontally,' and across the boundary of the system to and from the surrounding environment" (p. 18). Communication feedback mechanisms must provide accurate and prompt information about tensions and difficulties within the school or program. And people must be able to secure and to provide information with minimal personal effort.

Appropriate use of feedback information in decision-making can increase CBE program effectiveness. Information can be collected on a wide variety of topics (e.g., learning outcome achievement, resource utilization, implementation strategy effectiveness, cost effectiveness). Seldom can a school or district collect, process, and disseminate all potentially useful information. Participants in the school system must, therefore, set priorities for information gathering. These priorities help define the system for collecting and disseminating information. As information gathering and processing systems are initiated and refined, they may be expanded to accommodate increasing categories of information.

Schools and districts may cooperate in planning complementary information-gathering strategies, and in sharing the results of subsequent information gathering, where appropriate.

Information-based Decisionmaking. CBE practitioners need continuous feedback to make effective program-related decisions. Information-based decisionmaking requires that information needs be defined and that information be gathered, analyzed and reported in a form that facilitates objectivity. Values naturally and appropriately influence the ways in which information needs are defined and information processing occurs. Decisionmakers can benefit from an effort to maintain awareness of potential values influences in the decisionmaking process. Hall and Jones (1976) speak to the combination of the relatively objective and the subjective in decisionmaking:

> As expert evaluators point out, the actual act of decisionmaking includes a values-belief component as well as the summarized, relatively objective reporting of the evaluation data. It is at the point of making decisions that the most rational answer is not necessarily the best. However, the decisionmaker who has evaluation data will be able to make a more calculated decision and probably be more confident in his decisions than if the decision had been completed based on "gut feelings" (p. 273).

Hall et al. (1976) note that feedback can facilitate an actively adaptive implementation environment:

> Deciding on which variables are most in need of evaluations, who will make what decisions, what feedback mechanisms are needed, and who will handle evaluation activities should be settled before program development starts. Then, through successive approximations and adaptations to events and data, the evaluation (and implementation)

activities should be regularly adjusted (Hall et al., 1976, p. 273).

Definitions of competency based education type programs suggest the importance of an instructional management model that facilitates information based decisions regarding instruction. The same model may be applied to the management of the CBE implementation process itself.

A Framework of Information-Based Decisionmaking. Hall et al. (1975) and Hall and Jones (1976) suggest two frameworks within which decisionmaking processes can be organized (see Appendices A and B). One framework (Hall and Jones, 1976) incorporates two basic dimensions. The first dimension addresses three levels of program implementation: planning, implementing and maintaining. The other dimension addresses four decision areas: outcomes, resources, strategies, and costs.

In Appendix B, sample questions are presented within each cell of the framework. The remainder of this section focuses on each of the four decision areas as it relates to identifying information needs, and collecting and dissmeminating information.

Feedback Related to Outcomes. Utz (1974) suggests that feedback related to outcomes "will be...most important in effecting change, because it furnishes data pertaining to the relevance of objectives and effectiveness of instructional strategies" (p. 8).

A major purpose of feedback should be to provide a basis for modifying outcomes-referenced strategies. In this context, it is appropriate to apply feedback both to instructional outcomes and to implementation outcomes.

Woditsch (1975) raises a caution:

> Very seldom are objectives set on grounds other than tradition or some first-approximation response to the market place. Once set, the goals appear no more amenable to change than those of traditional curricula. Rarely are conscious efforts made to adjust program objectives in accord with program experience (p. 13).

Implementation goals and student learning outcomes should be assessed regularly throughout the implementation process. If results and expectations are inconsistent, modification may be necessary. Decisionmakers must deal with three major phenomena that impinge on the decisionmaking process: availability of hard data, context values, and Woditsch's researched observation that there is no tendency to change outcomes statements as a result of experience.

When attempting to implement a competency based teacher education program, Dickson et al. (1972) observed that a major problem related to student feedback:

> While we believe that data should be supplied in abundance concerning their skill attainment, etc., feedback to our students has been delayed because of the cumbersome evaluation procedures we have been using. Inadequate feedback has [also resulted] because most professors tested only once or twice during a course (p. 6).

Sound decisions depend on reliable, timely outcome information. Inadequate feedback hinders decisionmaking by both students and professional staff.

Other feedback activities affecting CBE program imple-

mentation include the review of instructional scheduling and pacing information by supervisory personnel. Lasser and Elam (1974) observe that "regular monitoring of these aspects [scheduling and pacing] of program operation provides for increased teacher accountability, and help focus teacher attention on the attainment of specific program outcomes" (p. 8). They suggest that "the emphasis of such review activities (should be) on identifying and correcting any problems or potential problems that might impede pupil progress toward program goals" (p. 8).

Southwest Regional Laboratory staff studied the effects of monitoring and reporting the reading achievement of first-grade pupils on several levels. After studying fifteen schools, using four different levels of accountability and reporting, they offer the following comments:

> Reporting required that teachers submit to their principals a record of pupil achievement scores on each assessment exercise administered. A 45-item criterion test based on the major objectives of the reading program was individually administered at the end of the school year. A significant positive relationship ($p. < .001$) between level of teacher reporting and pupil reading achievement increased with each increase in level of teacher reporting. In addition, program completion ranged from 60 percent for the lowest level of reporting to 75 percent at the highest level (p. 9).

Progress toward desired outcomes should be continuously assessed and instruction modified accordingly. Thus, with each assessment the performance ideal may be more closely approximated.

Feedback Related to Resources. Major categories of resources may be conceptualized to include personnel, materials and incentives.

Miles (1965) suggests that a healthy organization uses personnel effectively so that they are neither overworked nor idle. There must be a close relationship between each person's capacity to accomplish a task and the demands of that person's particular role. In this sense, capacity is very dependent on the skills, training, materials, and incentives related to CBE implementation.

Once planning decisions are made, it is necessary to obtain adequate feedback on the rate and effectiveness of resource utilization during both the implementation and maintenance phases of CBE. There is some evidence in the literature that additional resources are frequently required during the early stages of implementation. As time passes, schools gradually find ways to adapt extant resources to new processes. Initially, schools may maintain dual systems until more appropriate systems evolve to an efficient level.

Feedback Related to Strategies. New instructional materials and procedures are continually being developed. Each developer must identify the kinds of feedback that will effectively improve the product. Some useful types of information include the following:

- Students' reactions (appeal, relevance, utility, interest, etc.)
- Teachers' reactions (utility, manageability, relevance, etc.)

- Amount of time required for students to complete a unit or sequence of instruction
- Areas of confusion, errors, and information gaps
- Student performance data

As mentioned earlier, teachers can develop materials in a workshop setting, use them with their students, secure student feedback, and return to the next workshop session to make appropriate modifications. Workshop facilitators can develop simple checklists to help teachers ensure quality control. Appendix C includes a checklist developed by staff of the Seattle Public Schools. Teachers participating in an individualized instruction workshop use that list to evaluate learning packages before using them with students.

Publishers, regional educational laboratories, state departments of education and school districts that prepare materials for wide dissemination generally require comprehensive quality control procedures. Materials are evaluated with regard to usability, adaptability, cost effectiveness, and effectiveness in meeting goals. Developers need to secure the kind of feedback that leads to constructive modification: often there are attempts to ensure that the final product will be effective in a wide variety of settings.

Learning packages or instructional modules are frequently developed by teachers and curriculum specialists. It is important to collect information about these modules as development progresses. Hall and Jones (1976) describe a process used in some CBE programs:

> Students are asked to make notes in the margins and on the backs of pages as they proceed through a module, highlighting points they believe should be brought to the attention of the module developer. To further systematize this process, a module feedback form of the type developed by Englehardt, Gouge, and Hall (1972) can be filled out by students after completing a module (p. 279).

A sample module feedback form is displayed in Appendix D.

Hall describes another feedback form that has been used: a computer card inserted within reusable instructional materials such as films or tapes (See Appendix E for a sample form). Information from this form provides feedback to learning resource center staff about the perceived effectiveness and appeal of the materials.

All new materials should be evaluated for their quality and effectiveness. Students, parents, teachers, support staff, and administrative staff can all provide information when appropriate feedback systems are operable. That information provides a basis for improving the materials, as well as annotating them for new users.

Feedback Related to Costs. Cost is a critical factor having implications for the success or failure of changes such as CBE frequently represents. Funding processes and traditional accounting and budgeting procedures make detailed cost difficult to monitor. Frequently, costs are not itemized. In addition, a wide variety of costs must be considered: e.g., costs relating to personnel, facilities, materials, services, and equipment. These costs

may be usefully monitored within program, activity and implementation time frames. For each CBE program, adequate feedback systems should enable schools to report the costs of activities such as developing materials, training teachers or other program participants, pilot testing, planning, diagnosing, instructing and evaluating.

Little information is currently available on the cost of CBE-type programs. Initial indications are that CBE programs may be more expensive than non-CBE programs. Woditsch (1975) discusses costs related to learner-centered curricula:

> The costs of learner-centered curricula in terms of human resources is higher. This is a totally predictable outcome much ratified by research. Even in instances where learner-centered curricular costs roughly equal those of comparable traditional programs, faculty activity studies disclose a greater commitment of personnel time to the program. A not unattractive corollary frequently emerges in evidence that students, too, give themselves more intensively (p. 13).

There are some exceptions to the cost trends. One is cited by Olson (1971): "A competency based program in business education reported a net decrease of 16.7 percent in student-semester-hourly instructional costs." Olson explains that the program combined three typed of change: "CBE, individualized instruction and differentiated staffing." Although the two years of planning, developing, and training were expensive, the new program provided enough flexibility in student scheduling and staff use to permit additional subsequent modifications at no more than baseline cost.

Hall and Jones (1976) review efforts to develop CBTE

programs in five state-supported institutions in Washington state:

> Hite (1973) reports that it was a consensus that the prototype programs were more costly than the traditional programs. Hite has clustered the increased dollar costs around three factors: (1) the resources, manpower, and money needed for program development, (2) the program requirements for individualization of instruction, and (3) the involvement of added personnel, such as school faculty. Hite found that each of these cost factors accounted for over 50 percent of the estimated 150 percent increase in costs over the traditional programs for prototype Performance Based Teacher Education (p. 283).

Hall and Jones suggest, however, that costs will decrease following the initial development and implementation phases. They have drawn their information from CBTE program costs. CBE programs developed for K-12 schools may require quite different expenditure levels. Although the evidence to date is not extensive, it is fair to assume that CBE programs will be more expensive than the traditional programs -- at least during their early development stages. There is a need for carefully estimating, budgeting, monitoring, and reporting development costs of clearly specified CBE programs or program elements.

Hall and Jones (1976) describe one system that addresses the need for a monitoring system:

> One particularly useful system that merits discussion is that of Wallace and Witzke (1972), who have attempted to develop a monitoring system for large-scale programmatic research and development efforts that can easily be adapted to the needs of CBE program managers. The composite system has been named the General Accounting System or GAS, and was developed to systematically monitor and estimate the time, resources, and dollar cost of future R&D efforts. Using the entire system requires adjusting the budget reporting and purchasing procedures as well as enlisting the cooperation of the personnel involved (p. 284).

In planning, developing and implementing CBE programs, costs to federal, state, and local educational agencies may be projected and analyzed. Cost information may be useful, in part, in answering questions or confirming answers to questions such as the following:

- What development efforts should be undertaken?
- What agency can best undertake a specific development effort?
- What agency can provide services that meet common needs most effectively?

The financial burden of developing CBE programs has fallen heavily on local education agencies. This trend is likely to continue unless development efforts can be appropriately shared by commercial agencies as well as by federal, state, and local agencies.

Feedback systems that reflect considerations such as those discussed in this subsection should facilitate informed decisions related to costs of planning, implementing, and maintaining CBE-type programs.

Scope of Program Implementation

CBE programs are being implemented in a wide range of settings. As with other educational innovations, some may be tempted to encourage CBE implementation systemwide -- the assumption being that if CBE or elements of CBE are "better" than elements of the present system, they should be adopted and implemented as soon as possible. In determining the scope of an implementation plan, school personnel should consider the complexity and extent of the required changes and the degree to which the CBE elements being considered are

transferrable from one situation to another. Determining the scope of program implementation requires addressing questions such as the following:

- o What is the appropriate rate of implementation?
- o How much of the instructional program or the total curriculum should be affected?
- o How many and which schools or classes should be involved?

Rate of Implementation

Among the factors that Rogers (1968) suggests would affect rate of program implementation are: relative advantage, complexity, divisibility, and communicability. Rogers also suggests that an economist would say rate of implementation depends on the relative balance between costs and rewards.

Relative advantage is described as the degree to which people perceive a change or innovation -- in this case CBE, as an improvement over tradition. Legislators, school administrators, teachers, students, parents and community members may individually and collectively have very different perspectives regarding CBE's advantages. This has implications for training and orientation, as well as for the amount of time allotted to other implementation activities at any particular site.

Complexity is described as a measure of how difficult a change or innovation, in this case CBE, is to understand. Complexity is a function, in part, of an operational CBE model. Basic elements of competency based education are described in

an earlier section of this paper. These elements, and varying program emphases consistent with the elements, are discussed in the Oregon Competency Based Education Program paper, Alternative Models of Competency Based Education.

Divisibility is described as the degree to which a change or innovation can be implemented in separate, functional parts. CBE lends itself to divisibility. Schools can identify desired outcomes at the district, program and course levels at one point in time, and identify or prepare related measures of outcome attainment at another time. Different schools can even take different approaches to CBE program development.

Communicability is described as the degree to which a change or innovation can be explained and demonstrated to others. The processes basic to competency based education may frequently be perceived as difficult to communicate succinctly and clearly. This may be a function, in part, of insufficient conceptual clarity or consensus regarding these basic elements at present.

Degree of Program Change

The characteristics of CBE make possible a wide range of implementation options. A number of variables that help determine whether CBE will be accepted involve the proposed rate and degree of change A few variables are cited by Gallaher (1965):

> [For instance] what is the extant of the target system's felt need for change? Is the time factor right; that is, is the system already undergoing change, or is there a target system apathy induced by previous innovative

> failures? There is also the matter of size in the system to be changed, and the associated organizational complexity that varies with size. The latter bears importantly on communications effectiveness, which is in turn related to the problem of determining the most viable unit for effecting change. It might be that even when the entire target system is scheduled for change, it can be done best by changing smaller, more manageable components one at a time (p. 44).

There are many ways in which to determine what portion of an instructional program should be initially affected by CBE implementation. One way is to identify only curricular programs or content areas whose staffs are eager to implement CBE. After sufficient "experimentation" and field testing, additional interested staff may join the project. Another approach is to begin with the largest component or curriculum area of the program, assuming that its activities will positively affect the activities of smaller program components or curriculum areas. A third approach is to begin with the program component that promises to be easiest. For example, it may be easier to implement CBE in mathematics classes than in social studies classes, because of the adaptability of mathematics content and skills to precise measurement. Initial success in implementing CBE is important because it offers administrators the opportunity to learn "process" skills, and provides staff the intrinsic reward of being associated with and being able to display a model for peers to observe.

It may be appropriate to intentionally and even openly ignore some problem area in CBE installation when developing an initial approach to implementation. Hersh (1976) refers to this strategy as 'selective negligence.'

How Many and Which Schools to Involve

A state or federal agency considering implementation strategies for CBE programs may be interested in House's (1976) observation that:

> Innovation in a region will be introduced through the largest city...and will follow a combination of two routes. One route leads from town to nearest town over the transportation network. The other leads from larger to smaller towns down the urban hierarchy (p. 337).

The findings cited by House bear on the selection of initial implementation sites. Special consideration may have to be given to very small or very remote districts.

In some schools and some districts change is valued, and people have learned to expect it. Such sites may provide excellent opportunities for success. Discussions among staff and community members may help clarify expectations prior to adoption and implementation decisions. Colyer (1976) suggests it is important to show teachers from the outset that they have a voice in whether, as well as in how far and how fast, the implementation of CBE will proceed.

In discussing the League of Cooperating Schools, Goodlad (1965) acknowledges some school selection problems:

> Conditions surrounding entry of some schools into the League have hampered progress from the beginning. In retrospect, we think that we left to the districts too much of the initiative with respect to the process of school selection. As a consequence, the orientation of principals and teachers varied enormously. Some of the principals attending our first meeting scarcely knew why they were there, and many of them floundered when it came to explaining to their teachers what the League was designed to do (p. 8).

The knowledge of expectations combined with open dialogue about desired changes in plans may promote a feeling of security:

> I am suggesting that in formal organizations of a service variety, such as educational systems are... those who are secure can sustain the threat of examining alternatives, whereas, those whose margin of security is low will resist changing a system that has accommodated to them. In practical terms...I am posing the hypothesis that the better teachers in a given school system are more likely to accept innovations than are the poorer ones....(Gallaher, 1965, p. 43).

In summary, several conditions appear desirable to smooth and effective implementation of changes in schooling such as those generally represented by CBE:

- Persons considering CBE implementation should clearly understand, and preferably even cooperate in defining or describing, the scope of the implementation task. Planned and monitored increase in scope may be a part of the implementation design.
- Involved staff should have planned assistance in attaining the necessary skills and knowledge to implement CBE.
- Involved staff should have resources and materials necessary to support operation of the CBE program they have designed.
- The organizational structure of the implementing site or agency should be compatible with CBE procedures.

Resources utilization strategies should, of course, be differentially designed, initiated and managed to create and sustain these CBE supporting conditions in different settings, with different program emphases.

IMPLEMENTATION CONSIDERATIONS FOR FEDERAL, STATE AND LOCAL AGENCIES

This document has presented a range of considerations for implementing competency based education, with its major focus on the school district. Two areas of question remain: What implementation strategies at the federal and state levels can be employed to support the efforts of local agencies? And how can these three levels be made to interact with one another smoothly to support the implementation of competency based education programs?

Federal Agencies

In discussing incentives for implementing innovations in the public schools, Pincus (1974) identified a number of current conditions that might affect the capability of federal agencies to facilitate the implementation of changes in schooling such as competency based education. Following are excerpts from Pincus' discussion.

> "R&D organizations frequently do not provide sufficient implementation guidance in light of the variety of school situations where adoption is tried" (p. 125).
>
> A related difficulty is the tendency of federal and state agencies to view their contributions as seed money to be replaced by district funds if the program is a success.
>
> But school districts know that the typical cost of such programs ($100-500 or more per student per year) is beyond their ability to finance for the student body at large and to use up district funds for applying the innovation to only a small number of students raises serious ethical questions for a regulated public utility.

> The school districts do not perceive the federal government as demonstrating clear or consistent policies toward innovation. There is no clear long-term benefit or penalty to a district if it adopts or fails to adopt one set of innovations in preference to another. This tends to reduce the school's respect for federal policies toward innovation, and to breed a certain cynicism as to the merits of serious efforts at innovation. Furthermore, since federal aid fails to systematically support hard alternatives and to scamp easy ones, it in fact encourages a strategy of Grantsmanship.
>
> The schools interpret these peculiarities of federal aid policies as meaning that federal aid is unreliable soft-money that will disappear as suddenly as it arrived. Therefore, school districts characteristically refuse to use federal money as the basis for any substantial long-term changes in ways of doing business (p. 127).

Many options nevertheless exist for meaningful federal level support of CBE implementation. These options may be grouped according to the following categories: Generating Support for CBE, Incentives, Scope of Implementation, Research and Development, and Feedback.

Generating Support

Evidence of or commitment to long-term federal-level support for CBE may be helpful in creating and sustaining a climate favorable to adoption and implementation. Such commitment may be demonstrated, in part, through legislative action. The federal sponsorship of programmatic research and development activities can provide encouragement and generate information and materials helpful to CBE implementers. The support by national agencies of such activities as conferences, workshops, demonstration centers,

and training programs, can provide opportunities for the sharing of CBE-related information and experiences. Additional supports systematically provided or shared at the national level may encourage the introduction, study and refinement of CBE on a wide scale.

Resource Utilization

Resources made available through action at the national level can be used to support the implementation of CBE. A federal agency, professional organization or legislative committee can serve as a CBE change agent. Federally supported demonstration sites may provide state and local agencies an opportunity to observe CBE programs operating in a variety of formats and settings. Closely monitored studies will provide additional information in such areas as CBE implementation strategies, organizational changes supportive of CBE, program effectiveness and cost effectiveness. Such studies might illustrate alternative CBE program emphases, and provide state and local personnel an opportunity to participate in developing the necessary skills and procedures for introducing and maintaining a CBE program. The importance of practical program demonstration is highlighted in the following discussion by Scanlon (1973).

> For any innovation to have real impact, broad-scale implementation in a variety of student populations is a necessity. We have established a Nationwide Network of School Districts in order to demonstrate to the educational community that individualization is a viable and practical strategy for teaching youngsters to be independent and self-directed

> learners. The assumption behind the establishment of the Network is that demonstration is an effective way to diffuse new educational programs to the greatest number of schools -- and students -- in the shortest amount of time.
>
> Thus far, 80 elementary schools in 43 states have joined the Network, and many state education departments have indicated significant interest in the project. The goal is to build a network of 100 school districts, at least 2 in each of the 50 states. Although we cannot financially support the Network schools, we are helping schools locate possible sources of funding so that they can participate in this effort to bring individualized learning into the classroom.
>
> In addition to serving as demonstration sites for curriculum innovation and organization, Network schools also serve as training centers for teachers and administrators interested in bringing individualized learning programs to their school districts. Training materials and procedures have been devised and are available to Network schools. Also, a staff of developmental specialists regularly visits the schools and assists school staff in identifying and solving problems relative to the implementation of individualized programs (p. 11).

The opportunity to try out CBE programs on a short-term, low-risk basis may encourage participation by schools and personnel that generally resist innovations. Such "trial runs" might involve the use of validated, exportable instructional programs and/or local development projects funded via mini-grants.

Incentives

Traditional educational reward structures tend to be restrictive. Incentives provided at the national level may stimulate state and district level agencies to implement CBE.

Some have already been suggested. Two are identified by Rebell (1975):

> As an alternative implementation approach, consideration might be given to a voluntary inducement model which would provide special grants or other funding to schools which choose to adopt CBE approaches. Consumer-oriented legislation might also be enacted which would grant students attending or applying to colleges (or even secondary schools) a right to demand detailed information on institutional goals and approaches or to enter into contracts through which schools could be held accountable for providing specified processes and learning situations (pp. 8-9).

Scope of Implementation

When Individually Prescribed Instruction (IPI) was disseminated nationally, the necessity of retraining school administrators was identified among the most apparent needs (Scanlon, 1973). Many administrator and teacher needs related to CBE may well be similar to those related to IPI. Practitioners at all levels will need not only the competencies required to plan, manage and implement CBE programs, but also skills relating to the following functions: outcome specification, assessment, needs identification, program development, program evaluation and information management (Hall, 1976).

Research and Development

Federally sponsored research and development efforts can strengthen the base for CBE implementation. For example, systematically developed resources and products can be used in effectively communicating program information and promoting

teacher skills related to CBE. Through such materials, local agencies seeking information on alternative approaches to CBE and their effectiveness may obtain the documentation they desire.

CBE relevant training materials and programs can be developed and validated by regional educational laboratories and centers. To the extent that exportable training materials are directed to the required state, district and school level personnel skills, the implementation process should be facilitated.

> Training school district personnel to adopt and institutionalize innovations requires systematic strategies and products. These strategies lie outside the typical publisher consultants, teacher guides, and the university settings. As an integral part of the dissemination strategy, the training (or more accurately, retraining) needs are often of three basic levels: school district central office personnel, school administrators, and teachers (Scanlon, 1973, p. 9).

Nationally sponsored development and dissemination of CBE resources and materials can be effective. Schools may find it useful to have well defined alternatives for --

- o Identifying outcomes
- o Measuring outcome achievement
- o Structuring curriculum
- o Providing instruction
- o Linking strategies to outcomes
- o Maintaining management systems consistent with the above

Resources available that address CBE-related needs are

described in the CBE Sourcebook developed by the OCBE Program and available from the Northwest Regional Educational Laboratory.

Feedback

When federal agencies become involved with research and development, product dissemination, program orientation and resource support for such innovations as CBE, they generally develop feedback systems to obtain information on feasibility, effectiveness and cost efficiency.

> This feedback which is continuous in nature, provides data on the efectiveness of product utilization, curriculum implementation, and school management problems. This assists in the redesign and revision of products and procedures (Scanlon, 1973, p. 14).

When large sums of money and effort are expended on the development of CBE materials and procedures, quality control procedures help to maintain the integrity of the products. Quality control procedures also help monitor the process of program implementation.

> In the past, many well-publicized educational innovations, after attracting widespread interest, failed when implemented outside their initial settings. A major cause of this poor record of implementation has been absence of detailed systematic specification for the control of the operation, coupled with a realistic method for monitoring and changing the implementation once it was operational in a given locale (Scanlon, 1973, p. 12).

Assessment instruments can provide information on the extent to which an innovation has been implemented. In discussing the implementation of IPI in schools, Scanlon (1973) describes two such instruments.

> The Consultant Diagnostic Instrument (CDI) which is the checklist for the consultant's use in periodic observations and reports on Network schools, was designed to provide basic descriptive data concerning the degree of implementation for any particular subject to allow for evaluation comparisons across schools and to provide an index of degree of implementation for each school.
>
> The second instrument developed for use by the local school principal is "Self Improvedment Guidelines for New Schools." SIGNS has been designed to provide beginning schools with a means for assessment of the degree to which recommended processes and practices are used in an individual school. The checklist and form provided enable the administrator to make interpretable observations on various aspects of the innovation (p. 13).

Any effort to support CBE implementation nationwide will likely involve state and local education agencies. Therefore, state and local representatives would appropriately be involved in the planning of any national CBE support or implementation strategy. State departments of education and legislatures have the legal authority to implement change in educational policy, and can retain a local perspective regarding the needs and potential for CBE implementation.

> The state agencies are interested in the statewide dissemination of new ideas and programs of schools. Developments such as the 1967 amendments of ESEA, which strengthened the state role in promoting inovation, and the President's revenue sharing plan are evidence of increasing need for greater state involvement in educational change. Structurally, no agency is in a better position to work for innovations than the State Education Agency. This agency has power which it must use prudently and with due recognizance of the American autonomy in educational affairs. But the fact remains that local school districts derive their legal authority from the states (Scanlon, 1973, p. 13).

To the extent that information, products and procedures that are consistent with basic program elements of CBE and are applicable in a variety of settings can be developed at the national level, federal agencies can facilitate the dissemination of CBE.

State Agencies

No specific combination of implementation efforts will assure success for all agencies. Certain elements of change strategies may be most effective at the state level. In describing attempts to implement planned change in New York state, Freeborne (1975) identified some problems that may be typical of other state environments.

> In New York state, all too often, research and development in education have been carried out in isolation from the real operation of schools in the local school districts. The R&D programs have not been planned with local problems and constraints in mind. In our current work, we try to have a 'hands-on' relationship with local school districts.
>
> Another factor has been the inadequate provision of implementation assistance. The traditional assumption has been that officials of local school districts are capable of defining their own problems and, given sufficient resources, taking appropriate action to solve them. Our experience has shown that many school districts do not have this capability. They need outside help. Our effort to develop a better instructional management support system arose out of our field experience which suggested that school districts could not make such an improvement on their own.
>
> Undue and misplaced categorical emphasis has also been important in affecting the success or failure of implementing change in local school districts. Not only did many programs, for example, under Title III, assume that local

school districts could define their problems precisely and conduct the necessary R&D to effect change, but also that they could fit them into an overall linked change plan or strategy. I question this assumption. Many categorical programs tend to lead to a 'parochial' rather than total systems view of schools. For example, the ESEA Title I program in the United States has led many school districts to develop separate educational programs for categorical projects. Districts do not often make the effort explicitly to link the categorical projects to their regular instructional programs. It is part of the state planner's role to point out the fragmented nature of the total effort and underline the price being paid by this emphasis on categorical projects undertaken in isolation.

Too often, the implementation of change has been impeded by excessively high expectations regarding results. It has been my experience that local incentives for implementing change are not great. The barrier of the current condition looms too high. The state planners must be content with small incremental gains in the direction of their goals. We are talking of an evolutionary process. It is important to note that one cannot challenge authority and power structures dramatically and at the same time solicit their cooperation in implementing change at the local level.

The availability of extra resources is important for success. There are certain start-up costs which must be funded. They generally have not been adequately provided.

The last factor influencing the successful implementation of change is dissemination. There has been an all too pervasive assumption that writing general articles about successful educational programs in one locality would convince other school districts to adopt the reforms. I think there are at least two reasons why this has not worked: 1. People like to feel that they are creating something that is different and that is a response to the problem that they understand best. 2. Such general articles really are not sufficiently detailed and prescriptive to show the local officials how to go about the task. Effective dissemination of educational change programs might well include visits of personnel to other school

> districts; the training of core staff to work on a continuous basis in districts; the adoption of procedures in a cookbook format showing how the program can be implemented step by step; and certain money incentive systems (Freeborne, 1975, pp. 20-21).

Implementation strategies applicable to state agencies may be conceptualized in the same categories discussed in regard to federal agencies: Generating Support for CBE, Resource Utilization, Incentives, Feedback, Scope of Implementation, and Research and Development Activities.

Generating Support

State level agencies have four basic constituencies: The state board of education, the Governor and the state legislature, local and intermediate school districts, and the general public (Freeborne, 1975).

In attempting to persuade these constituencies that CBE should be considered, adopted, or implemented, a state agency might consider a range of options including advocacy for voluntary adoption and implementation or mandate backed by existing incentive and accountability structures. Whatever option or combination of options are chosen, it is helpful to gain the support of top-level people in each agency. This support may be partially obtained through orientation activities (e.g., demonstrations, newsletters, conferences, explanations of alternatives and cooperative planning). Close consideration should be given to the nature of the constituency being addresssed and the respective motivations and interests of its members (Guba, 1968;

Woditsch, 1976).

State agencies should be prepared to provide their constituencies as much information as possible about CBE and its implications. Basic CBE processes should be clearly and concisely defined, its desired outcomes identified, and information regarding its effectiveness presented. Constituents will need information about CBE's history, emphases characterizing CBE programs being implemented elsewhere, and resources needed for implementation. If needed information is not available, the state may wish to consider establishing research and development programs and short-term tryouts, demonstrations, or simulations.

Resource Utilization

State departments of education are often in an excellent position to help districts implement CBE. A state department may choose to act as a change agent and major advocacy group. State agencies often have control over or access to the necessary material, information and human resources, including personnel with the skills required to facilitate CBE implementation.

Strategies can be devised for implementing and maintaining CBE within a state's school system. Scanlon (1973) suggests the following five change strategies, each modified slightly here to make it CBE-specific:

- Establish criteria to ensure understanding about and commitment to CBE.

- Develop CBE training programs for school district central office personnel, administrators and teachers.
- Establish CBE demonstration sites in a variety of settings.
- Develop an information network and feedback systems that permit the monitoring of CBE schools in terms of student progress and degree of implementation, and the collecting of research data on strategies, procedures and roles.
- Involve district-level central office administrators in the development of a capacity for implementing and maintaining CBE.

By tracing the flow of personal contact and influence, one can chart the likely course of innovation (House, 1974, p. 6). CBE is likely to be diffused through a network of personal contacts. A state agency can either use existing networks or develop new ones at the state, local and school levels. Because frequency of personal contact is partially a function of distance, proximity is an important consideration in designing a dissemination network.

Freeborne (1975) describes three activities that state agencies should consider. The first is the development of conceptual or practical models. The second is provision of technical assistance to district level personnel. (Freeborne suggests that "local school districts can most easily overcome their problems if experts are brought in from outside -- not necessarily personnel of the state department of education," p. 24.) The third is provision of financial assistance, especially during the early stages of innovation when the risk and financial burden are

greatest (Freeborne, 1975; House, 1974; Pincus, 1974).

The state legislature, local or state tax measures, federal agencies or private foundations may provide funds to help solve short-term, start-up funding problems.

It is desirable that state personnel advocating CBE-type change work closely with school staff during implementation. Pincus (1974) expresses the view that

> ...incentives to adopt and incentives to implement are largely different from each other. Innovation and implementation work through different agents in the institutional setting. The federal or state agencies propose; school superintendents or principals dispose; the teachers and students transform (p. 135).

Therefore, the efforts of the state department should not end at the school district offices. State agencies may want to consider training and recruiting people who work well with both R&D agencies and school personnel. Such collaborative effort may provide valuable support to CBE implementation.

District

The major focus of this paper is upon specific district level implementation strategies for CBE. A few general district level implementation strategy considerations are described in this section.

School district structures frequently allow only top administrators oportunity for extensive contact outside the organization. Principals generally have less and teachers generaly have even less. School districts in

the process of selecting new superintendents may want to consider the following:

> The superintendent (and his top staff) play a key role in introducing innovations into their districts, since they have the most outside contact...The career-bound superintendents look forward to their next job and feel that they must innovate to build a reputation. They also have a freer hand inside the district, as opposed to the place-bound person, who has made many friends and enemies in his rise to the top. The place-bound man is more constrained by the school structure, whereas the career-bound man does not mind stirring the waters, the man coming in from the outside does indeed introduce many more innovations than the man promoted from within. The outside man also cultivates many more external sources of innovation. The superintendent acts as a carrier, a catalyst, and a gatekeeper for new ideas -- within the framework of advancing his career (House, 1976, p. 338).

House (1976) also described central office staffs as playing a key role in promoting or inhibiting an innovation. The superintendent acts as a carrier, a catalyst, and a gatekeeper for new ideas -- within the framework of advancing his career (House, 1976, p. 338).

House (1976) also described central office staffs as playing a key role in promoting or inhibiting an innovation. He suggests that because of their control over communication, internal resources and policy, it is very important to have the support or sponsorship of at least one central office staff member.

Tarion (1975) suggests that a district's capability to implement a major innovation depends on the following factors:

- o Long-range commitment of [the] school board and superintendent to...program planning and implementation.

- o Willingness of the school board and superintendency team to devote substantial time to the process of planning for the program.

- o Recognition by leadership of the normal human reaction to resist a new program and the consequent need to adopt a strategy designed to overcome negative reaction.

- o Ability to achieve a balance within the administrative team to ensure an orderly transition from traditional program orientation to an emphasis on innovations in general, and CBE specifically.

Ironically, teachers -- who have only limited access to outside contacts and new ideas -- are often expected to assume the major burden of implementing CBE. Although they are influenced most by professional peers, teachers must rely principally on district administrators, periodicals and college courses for their new information (House, 1976). (Even if a teacher should wish to try a new program or procedure, the district central office may limit access to needed information.)

Given the high cost involved in providing the needed training, resources, materials, program support staff and tangible incentives, it is likely that a school district will initially implement a partial CBE program. Schalock (1976) discusses one conceptualization of a partial CBE program:

> For this discussion a <u>partial model</u> or an <u>approximate program</u> of competency based education is defined as one that does not incorporate all five of the defining

> characteristics of CBE in clearly recognizable form. Since the development of alternative models of CBE is largely a paper exercise, it is unlikely that partial models will occur, unless of course, the model builder chooses to define competency based education on a different basis. The implementation of school programs, however, is a different matter: here it is likely that most implementation efforts, at least in the beginning, will be approximate programs. It is unlikely that school districts will be able to implement a full-fledged competency based education program all at one time. The magnitude of change is such that most districts will require at best a three- or five-year period to shift their programs to a competency based mode of operation, and then it is likely that they will be operating in a manner that is only a rough approximation to what is desired or what may exist at a later point in time.
>
> It is important that this be understood, and not only as a matter of resource availability. Equally important is the matter of time, for the principles and practices of competency based education are so at odds with much of what goes on in contemporary schools that considerable time must be allowed for students and faculty to act habitually on the basis of CBE principles and practices. A clear understanding of time required for shifting from a traditional to a competency based mode of operation should elicit a great deal of tolerance for schools that only approximate a fully operational CBE program (Schalock, et al., 1976, pp. 25-26).

The specific implementation strategy alternatives discussed throughout the rest of this paper should be of use to districts in choosing, planning and managing the level and type of CBE implementation best suited to their needs.

POTENTIAL PROBLEMS OF CBE IMPLEMENTATION

> Many innovations...have been adopted but are often not successfully implemented.... The impedimenta of these innovations -- in the form of equipment, or a new set of management structures, or the vestiges of "bold, new" curricula -- remain beached by the wake of ephemeral educational revolutions while the system continues to operate as before.
>
> The responses of schools to opportunities for innovation appear therefore to be complex; and between the adoption and the implementation, innovations reoutinely disappear or suffer sea-changes (Pincus, 1972, p. 117).

Some potential obstacles to CBE implementation have been suggested in earlier sections of this paper. For example, a specific technique for providing CBE information may elicit negative responses, for reasons not related to competency based education itself. Advocacy groups may engender counter groups (House, 1974); cost reductions may seem appealing to certain constituents and uncongenial to others (Pincus, 1972); demonstration sites and experimental classrooms may provide useful information, but may be perceived as too unlike the home schools of visitors to be taken seriously (Goodlad, 1967a).

Rather than cause for discouragement, however, information regarding potential implementation problems may be viewed as advantageous. That is, such information permits the architect of change to prepare a CBE installation blueprint that reflects a sensitive analysis of the terrain on which a specific installation will take place. One cannot be sure that the analysis will sight

all the pitfalls in that terrain; however, to the extent that pitfalls can be anticipated, progress may be facilitated.

The potential problems addressed in the remainder of this section concern broad and basic implementation considerations related to schools, to CBE, and to change itself. To pursue the topographical metaphor, these pitfalls are deep.

Schools as Noncompetitive Organizations

As an education agency becomes more open by introducing change, it also becomes more vulnerable to elements against which self-perpetuating systems routinely protect themselves. Pincus (1972) proposes that the noncompetitive market structure of the public schools has a major effect on decisions regarding innovation adoption, and that the schools's bureaucratic and incentive structures predictably shape the transition from innovation adoption to implementation.

Schools have little incentive, he notes, to adopt innovations that are compelling in a market economy -- those that contribute to economic efficiency. Carlson (1965) concurs:

> The significance of the relationship with clients is implied in the label of "domesticated organization" which is given to organizations like the school.... They are not compelled to attend to all of the ordinary and useful needs of an organization. For example, they do not compete with other organizations for clients; in fact a steady flow of clients is assured. There is no struggle for survival for this type of organization -- existence is guaranteed....

> The consequence of domesticating organizations, as far as organizational change is concerned, is to restrict the need for, and interest in, change because of the environment of the domesticated organization in many important respects is more stable than it is in other types of organizations....
>
> Therefore, it seems reasonable to suggest that the domestication of public schools is a hindrance to change....(pp. 6-7).

The market economy of schools as defined by Pincus and by Carlson is not supportive of the type of innovation typically congenial to competitive organizations. Pincus also identifies three factors favorable to innovation in the schools:

> Bureaucratic Safety - When the innovation is perceived as favorable with respect to the current status and organization of the bureaucracy (because in a self-perpetuating non-market system, these bureaucratic values become socialized and tend to dominate other criteria; or in other words, the bureaucratic costs are the real costs of the system).
>
> Response to External Pressure - When external pressures for innovation are perceived as irrestible (because school systems cannot be entirely unresponsive to external pressures and financial constraints).
>
> Approval of Peer Elites - When key figures in the bureaucracy and their colleagues in other educational bureaucracies can agree about the acceptability of the innovation (because in the absence of clearly defined output criteria, consensus among the elite is often the primary decision-making criterion p. 120).

From Pincus' view, schools would be unlikely to adopt CBE if they perceived it as implying a radical change in the organization of the school system. Such change confronts the bureaucratic safety constraint.

Fear of external pressures could make school personnel reluctant to collaborate with other groups at the policy making level. To the degree that CBE seems to promote increased involvement of and collaboration with other groups regarding school policy and productivity, it may be perceived as contributing to increased extra-system pressures.

Pincus' discussion of the elite consensus constraint suggests that prevailing practice is likely to change only minimally. Local education agencies are, he feels, necessarily unclear regarding educational goals.

> [To the extent that] educational research and development has failed to enlighten them substantially about the relationship betweeen various educational technologies and any specified instructional aim...a rational bureaucratic elite would be unlikely to experiment voluntarily with major changes in structure or method (p. 122).

Demonstrated Effectiveness of CBE: "The Crowning Disincentive"?

Bureaucratic structure constraints such as those discussed by Pincus suggest that where the possible social and political consequences of an innovation loom large, and where the instructional benefits are uncertain, an innovation is likely to meet strong resistance from administration.

House (1976) considers the incentives to engage in innovation from the teacher's point of view.

> The personal costs of trying something new are greatly underestimated. The teacher has acquired...teaching skills laboriously over a long period of time.... These skills may not

> be superb, but he knows how to operate with them -- how to get by. Someone comes along and says, "Try this." The new skills make the old ones obsolete.... Furthermore -- the crowning disincentive -- there is seldom any conclusive evidence that the innovation is really worth much in the classroom.
>
> Thus the teacher is faced with learning a new mode of behavior at high costs with no expectation of tangible reward and with no assurance that the innovation will work any better than what he has been doing. No wonder teachers regard many new programs with some cynicism; too many such programs are not worth the personal investment. Few corporations would invest under similar circumstances (p. 339).

Schutz (1969) observes the "elegant no significant difference" of a comprehensive summary report of experiments on instruction conducted over the last 50 years. The report by J. M. Stephens demonstrates "the remarkable constancy of educational results in the face of widely differing deliberate approaches" (p. 2). In Stephen's words,

> Every so often we adopt new approaches or new methodologies and place our reliance on new panaceas. At the very least we seem to chorus new slogans. Yet the academic growth within the classroom continues at about the same rate, stubbornly refusing to cooperate with the bright new dicta emanating from the conference room (Schutz, 1969, pp. 361-362).

With little empirical data to demonstrate the effectiveness of a given innovation, the message is clear and compelling: Why change?

What data exist to support CBE adoption? Indeed, what data can be expected regarding the effectiveness of a

process that dictates neither outcomes nor interventions, but rather is designed to facilitate the systematic reduction of uncertainty regarding appropriate outcomes and means of instruction?

Huff (1976) observes that CBE provides a framework for "deducing a relevant education form what is to be done" (p. 5). She notes further, however, that

> no CBE program thus far has had a body of information derived from systematic empirical investigations to use as a basis of the deductions.... (p. 5).

Woditsch and his colleagues (1975) concur:

> Despite the mounting tide of commitment in all sectors of competency-based reform, first-generation performance and competency constructs remain largely untested. In some instances, the surrogate for a behaviorally specified competency has become the affirmative nod from a panel of faculty, and one questions how vast a divergence from tradition this really is. In addition, the question of which educational treatment best serves the development of a particular competency has barely been phrased (p. 5).

The need for further refinement and study of procedures and materials employed in competency based education is clear. Procedures considered essential to CBE -- procedures that should facilitate, in part, the development and formative evaluation of complete instructional programs -- are still in the formative stages of development themselves.

Some cards remain face down at this stage of the game. The value of CBE in facilitating more informed decision-making -- and ultimately, improved student outcomes in

education -- is to some degree still a matter of faith. Nevertheless, some institutions and individuals will be bold and will bet on CBE now. Their efforts and experiences with competency based education will provide one basis for meaningful assessment of its value.

Change by Mandate: What Chance for Success?

> We are concerned about forcing people in any way with regard to CBE. Several states now mandate competency-based criteria for teacher certification, effectively requiring that all teacher education in those states install CBTE programs. There are many who go along willingly. Others cannot see anything of value in CBTE. For those who would try it and see, no trial is possible, at least no real trial with the option to reject the new system. Frankly, we think the mandate is one of the worst things that has befallen the CBTE movement. The movement has enough going for it to succeed without a mandate, so why stimulate the emergence of a whole army of organized opponents?
>
> If you want to sell CBE, prove its viability with a well managed pilot program. Let the enthusiasm of students, faculty and cooperating professionals have its effect on the rest of the institution and you will probably end up with a full-fledged, voluntary CBE operation (Hall and Jones, 1976, pp. 251-252).

The degree to which CBE by decree threatens serious implementation efforts is conjectural. Mandated practices and materials have an ancient and honorable history education.

Competency based education-type programs are now being considered in the public schools of at least 29 states, and serious efforts to implement CBE are apparently underway (Goor and Tomlinson, 1976). Competency based teacher

education programs are mandated in at least twenty states, and CBTE is reported alive and well in many institutions within those states.[3]

Sensitivity to practitioner needs is not precluded by mandated practice in education. Practices may be "required" while leaving comfortable leg room for ownership and personalization. Required practices, including competency based education, may necessitate little real change from existing practices -- depending on the adopting unit and the emphasis in definition or interpretation of CBE. Thus, as Woditsch (1976) has suggested, an

> organizational system with aspirations to spread CBE throughout a state must have a capacity to detect existing strengths within schools and districts that comport with CBE dynamics and priorities. These surely exist at the level of the individual instructor who...habitually churns guts with instructional outcomes and student skill development. It also exists, often not neatly labeled, in the occasional curricular planning team. Here and there the CBE spirit already dominates an entire school, and needs little more than sanction and a few expressive vehicles to become explicit (personal communication, 1976).

A problem area related to mandated change and requiring

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[3] Because of the pressures of developing and refining new programs while teaching and conducting other customary activities, estimates regarding the robustness of the staffs at these institutions are more conservative. The staff time and energy required to develop, install, and refine comprehensive CBTE programs has been described as inordinate. Strategies for maintaining staff commitment and motivation to continue to expend such energy are just beginning to be explored (Hersh, personal communication, 1976).

sensitive attention during overall program design is discussed by Pellegrin (1975) in regard to a differentiated staffing effort.

> In the abstract, it is possible that innovation is best attained through concurrent attacks on multiple problems. For such an approach to succeed, however, it would have to be preceded and accompanied by systematic planning enormously comprehensive in scope. Furthermore, the implementation of radical revisions in education programs requires impressive financial support, assistance by many administrators and specialists, acceptance by personnel, etc.
>
> The project planners gravely underestimated the complexity of the tasks undertaken and overestimated the resources available for achieving the objectives they had in mind. It is a curious fact that some educators believe that radical changes in education is easily accomplished even in a short period of time although it is universally known that even minor changes in the schools are achieved with great difficulty (p. 96).

Gentry (1972), in reflecting on the ambitious goals and the actual progress of a competency-based effort in teacher education at the University of Toledo, acknowledges the complexity of the task. In a memo to the College of Education staff engaged in the CBTE effort, he suggests a realistic strategy for coping with the complexity and controlling the change.

> In making the decision to systematically develop the instruction for students in our elementary and secondary program, the faculty of our college assumed a task of enormous proportion. In fact, if we were to stipulate that each of the modules or components of the model were to meet minimum requirements for effectiveness, the task becomes impossible, given the time and resources available to us....
>
> An alternative...permits us to operate the instructional system almost at once with a minimum of

> resources. This...alternative is also systematic in its development of instruction, but it accepts approximations of the minimum requirements of the task. That is, each component of the system must still be dealt with, but the criteria for each component are met to varying degrees. For example, behavioral objectives may contain only the performance statement and lack of condition, or level statement. We may deal only with terminal objectives, ignoring enabling objectives, for the moment. Assessment instruments may have insufficient or token items. The means for accomplishing our objectives may, intially, be chosen because they are possible rather than for their pedagogical qualities.
>
> As one faculty member pointed out, the above conditions are not much different from those that exist now. There is one all-important difference, however. Our systematically developed approximations will be subject to continuous systematic revision...
>
> The point is, if we are to be successful in developing meaningful, effective instruction, and in maintaining an open academic community, we must each consider these critical alternatives carefully. This does not mean that we wait for perfect solutions for each problem, there will obviously be many occasions for compromise, but that we monitor all decisions in light of their effect upon our students and our professional lives. We have selected a strategy for accomplishing important goals. If any part of that strategy is inefficient, ineffective, or antithetical to those goals, we must have the flexibility and control to change the strategy as well as its products.

Summary

The preceding section covers three potential problems that may confront any major effort to implement CBE in education. The first concerns the noncompetetive nature of schools. As organizations with somewhat captive clientele, schools are not compelled to opt for economic efficiency, and can therefore afford to be highly resistant to

to certain innovations.

The second problem concerns the fact that CBE's effectiveness has yet to be demonstrated. Educators may thoughtfully weigh the proposed advantages of CBE-type programs against the time and effort they must invest in planning, implementing, and continually refining such programs or program elements. As more CBE programs are implemented and the results made known, educators will acquire a more sound basis for making decisions regarding adoption and implementation.

The third problem concerns the fear that legislative mandates or other requirements regarding CBE may stimulate opposition to the innovation, rather than build support. It is suggested, however, that although CBE as a general practice may be mandated or strongly encouraged, schools and teachers should be assisted in personalizing their programs, designing and implementing continuously adaptive programs which reflect sensitivity to their particular needs, skills and preferences.

GENERAL SUMMARY

Definition of CBE

This paper begins with a general definition of CBE as

> ...a process that facilitates with a known degree of effectiveness the acquisition of desired outcomes in learners -- including the ability to perform tasks related to success in job and life roles -- documents the achievement of these outcomes and links graduation requirements to specific performance levels on a particular set of outcomes (Schalock, 1976).

The definition details three categories of characteristics: defining, enabling, and unique characteristics.

Installation Strategies

Strategies presented in this paper are intended as suggestions for consideration by schools and districts intending to implement CBE. It is expected users will exercise imagination and flexibility in considering and adopting or adapting these strategies.

CBE installation may be viewed as a continuum which begins with user orientation, proceeds through intitial adoption and adaption, and culminates with the integration of CBE into the existing school structure. The point at which installation is complete may be conceptualized as institutionalization.

In the following paragraphs, some considerations of importance in facilitating a smooth transition to CBE are briefly summarized.

Generating Support

It is impotant that members of an agency suport CBE and the CBE implementation process. The extent to which they do so may depend partially on whether the change is imposed externally or initiated internally. Internal, flexible changes -- those perceived as most adaptable to users' needs -- generally stand a better chance of acceptance and support. Users need some assurance that they have a voice in whether and to what extent an innovation is adopted and in subsequent adaption activities.

Orientation

It is critical that potential users be provided a thorough orientation to CBE. Information on CBE can be provided in several ways, including workshops, printed materials, one-to-one consultation sessions, and classroom observations. Through orientation, users not only gain information about CBE, but may also become involved in the CBE adoption decisionmaking process. Support for CBE tends to increase in proportion to users' understanding of and involvement in the CBE change process.

Evidence of Support

Administrative support appears very important. Administrators may express open approval of the innovation, initiate actual implementation activities and encourage participation by others. Peer approval tends to enhance

the credibility of a proposed change because of the rapport and trust common within peer groups. External authority approval may also facilitate CBE implementation; many users value the opinions of recognized experts in the field.

Staff Involvement in Planning

In order to be part of the planning process, staff require a clear understanding of the innovation. All information provided should be precise, addressing specific program characteristics. Community members and educators on many levels will need information on CBE; therefore, the different informational needs of a wide range of audiences will require careful consideration.

Planning also involves evaluation of program effectiveness. Such evaluation depends in part on the gathering and processing of reliable data regarding past and present student performance. Anecdotal data and participant reactions are also important in assessing program effectiveness.

Training

To complement initial orientation efforts, training may be provided to help users develop the necessary knowledge and skills to design, implement and maintain a CBE program. Such training may be provided at the university level, as well as through ongoing staff development in the district implementing CBE.

Observation of External Programs

There are several advantages in giving potential users an opportunity to observe an operational CBE program in an external setting. For example, the experience may provide far more information regarding CBE procedures and implications than could readily be communicated through other means. In addition, external sites may serve as experimental environments which foster the development of generalizable implementation procedures.

Simulations

To supplement other training, users may be exposed to simulations of CBE-relevant procedures. Participants learn through instructional activities in an experimental setting, and have an opportunity to discuss concerns with colleagues.

Short-Term or Small-Scale Tryouts

Small-scale tryouts are often effective because they enable users to build confidence in CBE before feeling committed to full-scale implementation. A chance to try out particular components of CBE on an experimental basis allows users to become acquainted with the concept in a relatively risk-free context.

Using Strategies

Personalization is the key to effective use of any implementation stragegy. Users must weigh the relative value and appropriateness of any strategy, adopting what seems suited to

a school's or district's needs, and modifying or creating new strategies as needs dictate.

Resource Utilization

In implementing CBE, it is especially important that resources be used effectively. Following are some suggested techniques for helping to ensure efficient resource utilization.

Appointing a Social Organizer

The social organizer may best be thought of as a program manager: one responsible for implementing a major change. Such an individual should be selected with utmost care, since the position demands indepth understanding of CBE, an ability to conceptualize an operational CBE program within a specific context, skill in locating and organizing resources, and ability to motivate and unify personnel. In some cases, it may be advisable to enlist the specialized skills of someone outside the organization to fill this role.

Forming an Advocacy Group

An advocacy group, which often rallies spontaneously in suport of an innovation, serves several important functions. Frequently its members provide much of the work energy which keeps an innovation flourishing. Advocacy group members can also do much to enlist public support and obtain resources. In addition, the existence of an advocacy

group may help minimize internal opposition to an innovation by providing open support and serving as a source of reliable information regarding the innovation.

Using Support Services

Many types of suport services facilitate CBE implementation. They include training, maintenance of resource centers, effective and possibly innovative program support staff, and establishment of some means of personal communication to facilitate and maintain understanding of the innovation as implementation progresses.

Incentives

It is widely recognized that the reward structures operating within school systems are sometimes quite restrictive. At the same time, acquiring the necessary knowledge and skills to implement CBE often demands that teachers and administrators make great personal sacrifices in terms of time and energy. School systems may consider offering certain incentives to encourage this expenditure of time and energy.

Membership in an advocacy group may provide both extrinsic and intrinsic rewards to some users. Such membership may increase the chance to obtain needed resources, provide a sense of accomplishment if the innovation is successful, and may frequently generate peer approval. Training offers participants a chance to interact with peers and to enhance their knowledge of CBE; release time for participation

can make a training option even more attractive. The opportunity to learn more about CBE can be a very strong incentive, depending on what value users place upon the innovation.

Feedback

Appropriate use of feedback from students, teachers, administrators, community representatives and others can improve implementation and management processes and help increase overall program effectiveness. In addition, feedback may help pinpoint areas of confusion and highlight needs for additional information. Feedback may be gathered on virtually any CBE-relevant topic. It is important that an effective system be developed for obtaining, processing and disseminating feedback information. Data processing methods should promote objectivity in analyzing program effectiveness; and methods for obtaining and disseminating feedback data should be sensitive to audience needs.

Scope of Program Implementation

Potential users need to consider and to determine the rate at which CBE should be implemented within their district or school, the extent to which any existing program will be affected, and the number of schools, classes, and pupils that will be involved. These factors together help determine the scope of CBE implementation.

Implementation Considerations for Federal, State and Local Agencies

Agencies at federal, state and local levels can do much to suport various CBE implementation efforts.

Federal Agencies

Federal agencies can generate support through federally funded training and program implementation, support of new legislation, and sponsorship of analyses of the existing knowledge regarding CBE, followed by systematic research and development efforts. In addition, federal agencies can help ensure availability of CBE-related resources at state and local levels.

State Agencies

Implementation of CBE benefits from the support of the state board of education, the governor, the state legislature, local and intermediate school districts and the general public. Each of these constituencies needs current, relevant information on CBE.

State agencies can furnish information, provide training, and provide human and material resources. They can develop CBE models for consideration by local districts, offer technical assistance in planning and implementing a CBE program, and also furnish financial assistance -- especially during the early stages of implementation.

Districts

Local districts can support the implementation effort through a long-range commitment. In addition, it is helpful if the superintendent's office and the school board become fully active in all phases of planning. The transition to CBE can also be aided by districts' facilitating access to available resources and initiating and supporting a personalized communication system.

Potential Problems of CBE Implementation

Many problems can arise in the course of CBE implementation. For example, advocacy groups may engender counter groups. Demonstration sites and experimental models may seem too unlike observers' own school settings to be regarded as useful sources of generalizable information.

Many problems which arise are related in some way to one of the following factors. First, schools are basically noncompetitive organizations. Because their clientele is assured, economic efficiency may not be a high priority. Therefore, schools can afford to be highly resistant to an innovation, regardless of how attractively it may be presented.

Second, the potential of CBE has yet to be fully demonstrated. As more schools implement CBE, greater amounts of feedback data will become available. Although it is possibly unrealistic to expect that evaluation of change in education will yield unequivocal evidence of

program effects, outcomes-based data collection in CBE programs will provide users with increased information for making sound decisions regarding CBE adoption and implementation.

Third, there is some concern that if CBE is introduced to districts externally, as through legislative mandate, rather than internally, through voluntary adoption and design, users may oppose it without due consideration of its potential benefits. It is suggested, however, that even when CBE is mandated as a general concept, districts should be encouraged to retain and exercise control concerning the nature, degree, and sequencing of implementation. This will provide users a sense of choice regarding the implementation process and will help ensure program responsiveness to particular needs of an adopting unit. Long after initial implementation, a CBE program should be treated as flexible, with the expectation that it will be continuously modified based on changing needs, expectations, and capabilities.

REFERENCES

Allen, Jack, Chairman and others. Selected Minimum Standards and Statewide Dissemination, Oregon Department of Education. May 1975. pp. 1-59.

Ansaldo, Mary. In a personal communication to the author, 1976.

Baird, Hugh and Belt, Dwayne. Some Organizational Problems Encountered in Implementing Competency-Based Education. New Orleans, Louisiana. A paper presented at annual meeting, American Educational Research Association, March 1973. 10 p.

Baskin, Samuel Ed. Organizing Nontraditional Study. New Directions for Institutional Research. Jossey-Bass Inc., Publishers. 1974 San Francisco, California pp. 1-89.

Bassi, Juanita, and Watson, D. Gene. A Study to Identify Variables Perceived to Influence the Institutionalization of Innovations. A paper presented to the AERA Annual meeting, Chicago, Illinois 1974. 11 p.

Bhola, Harbans S.; Jwaideh, Alice; Knowlton, James. Training the Change Makers in Education. Audiovisual Instruction. Vol. 18, No. 1. Bloomington, Indiana. Jan. 1973. 3p.

Burns, Richard. Suggestions for Involving Teachers in Innovation. Educational Technology Magazine. Vol. 9, No. 1. 2p. Englewood Cliffs, New Jersey.

Carlson, Richard O. Change Processes in the Public Schools. The Center for the Advanced Study of Educational Administration. 1965 Eugene, Oregon. 92 p.

Carpenter-Huffman, P.; Hall, G. R.; Sumner, G. C. Change in Education: Insights from Performance Contracting. Ballinger Publishing Company. Cambridge, Massachusetts. 1974.

Charters, W. W. and Pellegrin, R. "Barriers to the Innovative Process: Four Case Studies of Diffentiated Staffing," Administrative Science Quarterly, Vol. 9, No. 1, 1973: p. 3-14.

Colyer, Phyllis. Informal remarks prepared during OCBE program seminar on Strategies for Implementing CBE, January 26-28, 1976.

Crowther, F. "Factors Affecting the Rate of Adoption of the 1971 Alberta Social Studies Curriculum for Elementary Schools, Master's Thesis, University of Alberta, 1972.

Dickson, George; Gentry, Castelle; Hersh, Richard; Moir, Hughes. Planning for a Performance-Based Teacher Education Program: A Final Report. American Associaiton of State Colleges and Unviersities. Washington, C.C. August 1972. pp. 1-242.

Edling, Jack V. Individualized Instruction: A Manual for Administrators. DCE Publications. Corvallis, Oregon. 1969.

Edwards, Roger and Wright, William J. Variables Affecting the Successful Introduction of an Innovative Program in Aesthetics. A paper presented for the Annual Meeting of the American Educational Research Association. Washington, D.C. 1975. 31 p.

Elementary-Secondary Guide. 1975. Oregon Department of Education.

Fraser, David. Effective Selection of Learning Strategies. Seattle, Washington. Seattle Public Schools. 1974

Freeborne, Gerald L. The Politics of Implementing Educational Change, As seen from the State Level. Educational Planning. Vol. 1, No. 3. January 1975. New York. 8 p.

Fullan, Michael and Pomfret, Allen. Review of Research on Curriculum Implementation Prepared for U. S. National Institute of Education, 1975.

Gardner, Herb. A Thousand Clowns. A Random House Play. New York City, New York. April 1962 py. 1-126.

Gallaher, Art. Change Processes in the Public Schools. The Center for the Advance Study of Educational Administration. Eugene, Oregon 1965. 92 p.

Goodlad, John I. The League of Cooperating Schools. California Journal for Instructional Improvement. 1967 4 p.

Goodlad, John I. Educational Change, A Strategy for Study and Action. National Elementary Principal. December 1968. p. 7.

Goodlad, John I. Lag On Making Ideas Work. New York Times. 1970. 2p.

Goodlad, John I. The Dynamics of Educational Change. McGraw-Hill Book Company. New York, New York. 1975.

Gross, Neal; Giacquinta, Joseph B.; Bernstein, Marilyn. Implementing Organizational Innovations. Basic Book Inc. Publishers. New York. 1971.

Guba, Egon G., Diffusion of Innovations, Educational Leadership. Journal of the Association for Supervision and Curriculum Development. Champaign, Illinois. January 1968. pp. 292-295.

Hall, Gene E. and Jones, Howard L. Competency-Based Education: A Process for the Improvement of Education. Prentice-Hall, Inc. Englewood Cliffs, New Jersey. 1976

Hall, Mary. Selected Minimum Standards and Statewide Dissemination. Division of Program Management Support. Salem, Oregon. May 1975. pp. 1-59.

Hall, Mary. Competencies Needed By School Districts To Implement Instructional Portions of Oregon's New Minimum School Standards. Oregon Department of Education. January 1976. pp. 1-29.

House, Ernest R. The Micro Politics of Innovation: Nine Propositions. A paper at the Superintendent's Round Table. College of Education. University of S. Florida. Tampa, Florida. (McCutchan 1974) January 1976. 4 p.

House, Ernest R. The Politics of Educational Innovation. McCrutchan Publishing Corp. Berkeley, California. 1974. pp. 1-307.

Howes, Virgil M. A Strategy for Research and Change. The League of Cooperating Schools; Childhood Education. September 1967.

Howey, Kenneth R. Preconditions for Education Renewal and Reform. Journal of Teacher Education. Vol. 26. No. 1 American Association of Colleges for Teacher Education. Wash. D.C. 1975. pp. 6-12.

Huff, Sheila. Problems in Implementing Competency-Based Programs. Educational Policy Research Center. Syracuse, New York. June 1975. pp. 1-20.

Kapfer, Philip G. Toward the Life-Intership Curriculum. State of Nevada Department of Education. Carson City, Nevada. 1970. p. 68.

Keil, Ellsworth C. A Structure for Innovation in Education. Educational Technology. Denver, Colorado. October 1969.

Knapp, Jack. taken from Report of a Summer Institute. Baker Intermediate Education District. Baker, Oregon. 1975, p. 93.

Lasser, Barbara L. and Elam, Robert J. The Challenge of Installation: Maintaining Instructional Program Effectiveness During General School Use. A paper presented at Annual Meeting of the American Educational Research. April 1974.

Lawrence, Sister Mary. Gearing Up for Curriculum Change. A Chance for Every Child: Assessing Needs Through Specific Goals. A paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education. Chicago, Illinois. February 1975. 13 p.

Matula, Franklin V. Factors Contributing to the Willingness of Elementary Teachers to Try Selected Classroom Innovations. Education Service Center. Region 12. Waco, Texas. 1972. 13 p.

McLaughlin, Milbrey. Implementation as Mutual Adaptation: Change in Classroom Organization. The Rand Corporation, Santa Monica, California. 1975.

Miles, Matthew B. Change Processes in the Public Schools. The Center for the Advanced Study of Educational Administration. Eugene, Oregon. 1965. 92 p.

Miles, Matthew B. Planned Change and Organizational Health: Figure and Ground. Paper for work in the Project on Organization Development in Schools. Horace-Mann-Lincoln Institute of School Experimentation. Teachers College Columbia University. 23 p.

Moore, Mary T. Local School Program Planning Organizational Implications. A paper presented at American Educational Research Association Annual Meeting. Washington. D.C. April 1975. 21 p.

Niedermeyer, Fred C. and Moncrief, Michael H. Considerations in Selecting Instructional Programs. SWRL Educational Research and Development. Los Alamitos, California. 1974. 8 p.

O'Hare, Robert W.; Lasser, Barbara R.; Bossing, Lewis. Providing for Visitors During Installation of an Educational Product: The SWRL Kindergarten Program Information Resource Centers. Report 42. Los Almitos, California. August 1972. pp. 1-35.

Oliver, Gordon. School Graduation Requirements in Oregon. Urban Studies Center. Portland State University. Portland, Oregon. September 1974. pp. 1-82.

Olson, Allan L. Can We Individualize Inservice Training. Educational Technology. Volume 14, No. 11. November 1974. Englewood Cliffs, New Jersey. pp. 41-43.

Pellegrin, Roland J. Administrative Assumptions Underlying Major Innovation: A Case Study in the Introduction of Differential Staffing. The Process of Planned Change in the School's Instructional Organization. The Center for the Advanced Study of Educational Administration. Eugene, Oregon. 1973. pp. 13-34.

Pellegrin, Roland J. Change Processes in the Public Schools. The Center for the Advanced Study of Educational Administration. Eugene, Oregon. 1965. 92 p.

Pellegrin, Roland J. Problems and Assumptions in the Implementation of Innovations. Journal of Research and Development in Education. Volume 9. No. 1. 1965

Pincus, John. Incentives for Innovation in the Public Schools. Prepared for NIE Symposium on Educational Research and Development. December 1972. pp. 1-33.

Pincus, John. Review of Educational Research. American Educational Research Association. Washington, D.C. 1974.

Planning for a Performance-Based Teacher Education Program: A Final Report. Submitted by University of Toledo to Urban Affairs Committee American Association of State Colleges and Universities. Washington, D.C. August 1972. pp. 1-242.

Rebell, Michael A. Esq. Legal and Legislative Implications of Competency Based Education. Educational Policy Research Center. Syracuse, New York. 1975. pp. 1-19.

Rogers, Carl R. Freedom to Learn. Charles E. Merrill Publishing Co. 1969 Edited by Carl R. Rogers and William R. Coulson. Columbus, Ohio.

Rogers, Everett M. Change Processes in the Public Schools. The Center for the Advanced Study of Educational Activities. Eugene, Oregon 1965. p. 61.

Rogers, Everett M. Diffusion of Innovations. The Free Press of Glencoe. Toronto, Ontario, Canada 1962.

Sarason, Seymour B. The Culture of the School and the Problem of Change. Allyn and Bacon, Inc. Boston, Massachusetts 1971.

Scanlon, Robert G. Building Relationships for the Dissemination of Innovations. Communications Group Workshop. Denver, Colorado. August 1973 18 p.

Schalock, H.D.; Spady, W.G. and Hathaway, W.E. Alternative Models of Competency Based Education. Working draft of a paper produced under National Institute of Education Contract No. 400-76-002. 1976. pp. 1-96.

Schalock, H.D.; Kersh, D.Y. and Garrison, J.H. From Committment to Practice. Oregon College of Education Elementary Teacher Preparation Program. Monograph Published in AACTE. Monograph series on Performance Based Teacher Education No. 20. January 1976. p. 132.

Schutz, Richard E. Methodological Issues in Curriculum Research. Review of Educational Research. Vol. 39. No. 3., June 1969. pp. 359-366.

Smith, Ronald. Turnabout: A Model for Specialty Schools. Continuation Proposal for 1975-76 Funded by Title III. ESEA - 1974-75. Portland, Oregon.

Tarion, Charles A. The Facilitation of Change: An Administrator's Dilemma. Paper presented at the Annual Meeting of American Educational Research Association. Washington, D.C. April 1975. 11 p.

Taylor, Richard L. Personal communication to Oregon Competency Based Education staff. Seattle Public Schools, Seattle, Washington. February 1976.

Utz, Robert T. and others. A Comparative Analysis of Two Models of Implementing Competency Based Instructional Systems. A paper presented at the American Educational Research Association Annual Meeting. Chicago, Illinois April 1974. 10 p.

Vogel, Francis X. and Bowers, Norman D. The Impact of the Nongraded School. Paper presented at the Annual Meeting of the American Educational Research Association. Chicago, Illinois. April 1974. 11 p.

Wacaster, Thomas C. The Life and Death of Differential Staffing at Columbia High School. The Process of Planned Change in the School's Instructional Organization. pp. 35-52.

Weikart, David P. and Banet, Bernard A. Planned Variation from the Perspective of a Model Sponsor. In Social Program Implementation, edited by Walters, William and Richard F. Elmore. Academic Press, Inc. New York, 1976.

Wilson, James Q. Summary of Group C. discussion in Change Processes in the Public Schools. Eugene, Oregon. University of Oregon. 1965. p. 82.

Woditsch, Gary and others. Assaying the Great Cargo Cult: Recent Research on Learner-Centered Curricula. Paper presented at the National Conference on Higher Education sponsored by the American Association of Higher Education. Chicago, Illinois. March 1975. 18 p.

Woditsch, Gary. Informal remarks prepared during Oregon Competency Based Education program seminar on Strategies for Implementing CBE. January 26-28, 1976.

Woods, Thomas E. The Administration of Educational Innovation. Reprint of earlier publication 1967. Bureau of Educational Research and Service. Eugene, Oregon. 1971. 53 p.

Yarger, Sam J. and Mallen, John J. Articulating the Bits and Pieces for Productive Change. Journal of Teacher Education. Volume 26, No. 1. American Association of Colleges for Teacher Education. Washington, D.C. 1975.

APPENDIX A

Level-of-use Framework

Figure 2

LEVEL OF USE FRAMEWORK

LEVELS OF USE	LoU CHART							
SCALE POINT DEFINITIONS OF THE LEVELS OF USE OF THE INNOVATION	CATEGORIES							
	KNOWLEDGE	ACQUIRING INFORMATION	SHARING	ASSESSING	PLANNING	STATUS REPORTING	PERFORMING
Levels of Use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user's development in acquiring new skills and varying use of the innovation. Each level encompasses a range of behaviors, but is likened by a point at identifiable Decision Points. For descriptive purposes, each level is defined by seven categories.	That which the user knows about characteristics of the innovation, how to use it, and consequences of the use. This is cognitive knowledge related to using the innovation, and feelings or attitudes.	Actively information about the innovation in a variety of ways, including questioning resource persons, corresponding with resource agencies, reviewing printed materials, and making visits.	Discusses the innovation with others. Shares plans, ideas, resources, problems, and problems related to use of the innovation.	Examines the potential or actual use of the innovation or some aspect of it. This can be a mental assessment or can involve actual collection and analysis of data.	Designs and outlines short- and/or long-range steps to be taken during process of innovation adoption, i.e., aligns resources, schedules activities, meets with others to organize and/or coordinate use of the innovation	Describes personal stand at the present time in relation to use of the innovation.	Carries out the actions and activities related to operationalizing the innovation
LEVEL 0 NON USE State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.	Knows nothing about this or similar innovations or has only very limited general knowledge of efforts to develop innovations in the area	Takes little or no action to solicit information beyond receiving descriptive information about this or similar innovations when it happens to come to personal attention.	Is not communicating with others about the innovation beyond possibly acknowledging that the innovation exists.	Takes an action to analyze the innovation, its characteristics, possible use, or consequences of use.	Schedules no time and specifies no steps for the study or use of the innovation	Reports little or no personal involvement with the innovation	Takes no discernible action toward learning about or using the innovation. The innovation and/or its requirements are not present or in use.
DECISION POINT A	*Takes action to learn more detailed information about the innovation.*						
LEVEL I ORIENTATION State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon user and user system	Knows general information about the innovation such as origin, characteristics, and implementation requirements	Seeks descriptive material about the innovation. Seeks opinions and knowledge of others through discussions, visits, or workshops.	Discusses the innovation in general terms and/or exchanges descriptive information, materials, or ideas about the innovation and possible implications of its use.	Analyzes and compares materials content, requirements for use, evaluation reports, potential outcomes, strengths and weaknesses for purpose of making a decision about use of the innovation.	Plans to gather necessary information and resources as needed to make a decision for or against use of the innovation	Reports presently spending self to what the innovation is and is not	Explores the innovation and requirements for its use by talking to others about it, reviewing descriptive information and sample materials, attending orientation sessions, and observing others using it.
DECISION POINT B	*Makes a decision to use the innovation by establishing a time to begin.*						
LEVEL II PREPARATION State in which the user is preparing for first use of the innovation	Knows logistical requirements, necessary resources and timing for initial use of the innovation, and details of initial experiences for clients.	Seeks information and resources specifically related to preparation for use of the innovation on own setting.	Discusses resources needed for initial use of the innovation. Joins others in pre-use training, and in planning for resources, logistics, schedules, etc., in preparation for first use.	Analyzes detailed requirements and available resources for initial use of the innovation.	Identifies steps and procedures needed in obtaining resources and organizing activities and events for initial use of the innovation.	Reports preparing self for initial use of the innovation.	Studies relevant materials in depth, organizes resources and logistics, schedules, and rehearses self in learning in preparation for initial use.
DECISION POINT C	*Begins first use of the innovation.*						
LEVEL III MECHANICAL USE State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.	Knows on a day-to-day basis the requirements for using the innovation. Is more knowledgeable on short-term activities and effects than long-range activities and effects of use of the innovation.	Solicits management information about such things as logistics, scheduling techniques, and ideas for reducing amount of time and work required of user.	Discusses management and logistical issues related to use of the innovation. Resources and materials are shared for purposes of reducing management, time and logistical problems related to use of the innovation.	Examines own use of the innovation with respect to problems of logistics, management, time, scheduling, resources, and general reactions of clients.	Plans for organizing and managing resources, activities, and events related primarily to immediate ongoing use of the innovation. Planned for changes address managerial or logistical issues with a short-term perspective	Reports that logistics, time, management, resource organization, etc., are the tasks of most personal efforts to use the innovation	Manages innovation with varying degrees of efficiency. Often lacks appreciation of immediate consequences. The flow of actions in the user and clients is often disjointed, uneven and unclear. When changes are made, they are primarily in response to logistical and organizational problems.
DECISION POINT D-1	*A routine pattern of use is established.*						
LEVEL IV A ROUTINE Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.	Knows both short- and long-term requirements for use and how to use the innovation with minimum effort or stress	Makes no special efforts to seek information as a part of ongoing use of the innovation.	Describes current use of the innovation with little or no reference to ways of changing use.	Limits evaluation activities to those situationally required, with little attention paid to findings for the purpose of changing use.	Plans intermediate and long-range actions with little projected variation in how the innovation will be used. Planning focuses on routine use of resources, personnel, etc.	Reports that personal use of the innovation is going along satisfactorily with few if any problems	Uses the innovation smoothly with little management problems over time. There is little variation in pattern of use.
DECISION POINT D-2	*Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.*						
LEVEL IV B REFINEMENT State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.	Knows cognitive and affective effects of the innovation on clients and ways for increasing impact on clients.	Solicits information and materials that focus specifically on changing use of the innovation to affect client outcomes.	Discusses own methods of modifying use of the innovation to change client outcomes.	Assesses use of the innovation for the purpose of changing current practices to improve client outcomes.	Develops intermediate and long-range plans that anticipate possible and needed steps, resources, and events designed to enhance client outcomes.	Reports varying use of the innovation in order to change client outcomes.	Explores and experiments with alternative combinations of the innovation with existing practices to maximize client involvement and to optimize client outcomes.
DECISION POINT E	*Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.*						
LEVEL V INTEGRATION State in which the user is combining own efforts in use of the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.	Knows how to coordinate own use of the innovation with colleagues to provide a collective impact on clients.	Solicits information and opinions for the purpose of collaborating with others in use of the innovation.	Discusses efforts to increase client impact through collaboration with others on personal use of the innovation.	Appraises collaborative use of the innovation in terms of client outcomes, strengths and weaknesses of the integrated effort	Plans specific actions to coordinate own use of the innovation with others to achieve increased impact on clients.	Reports spending time and energy collaborating with others about integrating own use of the innovation	Collaborates with others in use of the innovation as a means for expanding the innovation's impact on clients. Changes in use are made in coordination with others.
DECISION POINT F	*Begins exploring alternatives to or major modifications of the innovation presently in use.*						
LEVEL VI REFOCUSING State in which the user re-evaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.	Knows of alternatives that could be used to change or replace the present innovation that would improve the quality of outcomes of its use	Seeks information and materials about other innovations as alternatives to the present innovation or for making major adaptations in the innovation.	Focuses discussions on identification of major alternatives or replacements for the current innovation.	Analyzes advantages and disadvantages of major modifications or alternatives to the present innovation.	Plans activities that involve pursuit of alternatives to enhance or replace the innovation.	Reports considering major modifications of or alternatives to present use of the innovation.	Explores other innovations that could be used in combination with or in place of the present innovation in an attempt to develop more effective means of achieving client outcomes.

Procedures for Adopting Educational Innovations Project, Research and Development Center for Teacher Education, University of Texas at Austin, 1973, N.I.E. Contract No. NIE C 74 0087

APPENDIX B

Program Development and Adoption Stages

Table 2: Program Development and Adoption Stages

Decision Areas	I. Planning for	II. Implementing	III. Maintaining
A. Outcomes Desired Occur Student Faculty Institution	Why are we not getting what we want? What are the desired outcomes?	Does it look as if we are going to get the outcomes we want? What unexpected outcomes are we getting?	What outcomes are we regularly getting? What unexpected outcomes are we getting? What new needed outcomes have been identified?
B. Resources Have Need Materials Facilities Skills	What resources do we want? What resources do we need?	Exactly what resources are needed? Will our resources support CBE on a regular basis?	What resources are now freed up? What unexpected resources are being consumed?
C. Strategies Instructional Installation	Which instructional strategy do we want to use? How should we implement? (Which adoption strategy? What training?)	Are the instructional strategies working? What changes msut be made in the strategies? Is further faculty training needed? Will everyone be able to do his part?	How effective are the instructional strategies? How effective were the implementing strategies?
D. Costs (Personnel and Resources) Dollars Time Resources One Time Ongoing	How much is it costing to plan? How much will it cost to implement? Once implemented, what will maintenance cost be? How long will materials last? How much staff time to implement?	What is it costing to implement? What do the maintenance costs now look like?	How much is it costing to maintain? How much did it cost to plan for and implement this innovation?

APPENDIX C

Specific Evaluation of Learning Package

SPECIFIC EVALUATION OF LEARNING PACKAGE

Use the following list of criteria to evaluate the consistency and organization of the learning package that you have just developed.

Major and Component Ideas (Concept and Sub-concepts)

1. Are the concept and sub-concepts stated simply and completely?
2. Are the concept and sub-concepts written at the language level of the proposed learner?
3. Are the sub-concepts logical and relevant segments of the concept?
4. Are the sub-concepts manageable within a single learning package?

Learning Objectives

1. Are the learning objectives stated simply and completely?
2. Are the learning objectives written at the language level of the proposed learner?
3. Are actions described that can reasonably be expected to result only if the desired conceptualizations have occurred?
4. Are intended outcomes described specifically enough so that evaluation is possible, but not so specifically as to result in segmented, non-functional behaviors?
5. Are the conditions specified under which evaluation will occur?
6. Are the qualitative and/or quantitative expectations clearly stated or implied?

Learning Materials and Activities

1. Will the learning materials and activities help the student realize the performances specified in the learning objectives?
2. Do the learning materials and activities provide direct perceptual experiences with the properties of objects, processes, and/or consequences? If not, do they elicit vivid recall of prior experiences with those properties?
3. Do the materials and activities employed operate through sense channels that match the properties about which the student is learning?

4. Do the materials and activities employed operate through verbal channels when necessary and effective?

5. Do student responses required by the materials and activities utilize the following two processes, either separately or in combination: (a) verbal or pictorial responses, and (b) overt non-verbal executions?

6. Have materials and activities been provided for the student who learns best by visual means? by oral-aural means? by physical means?

7. Has a variety of materials and activities been provided each of several specific performance levels?

8. Is there sufficient range of difficulty in the materials and activities listed?

Evaluation

1. Do the test items call for behaviors identical to the action terms in the learning objectives?

2. Does pre-testing diagnose what should be learned in the learning package (in other words, which objectives have already been met and which have not)?

3. Does self-testing help the student decide whether he needs to re-cycle himself for additional learning activities before taking the post-test?

4. Does the difference in response between pre- and post-testing provide a measure of learning growth?

5. Does self-testing help the student set his own specifications for achieving the learning objectives?

6. Does self-testing take the student's focus off the teacher and place it on the learning task?

7. Do testing procedures focus on achievement rather than on failure?

8. Do test results help the student determine his next steps in learning?

9. Does testing provide feedback for continued curriculum development?

Organizations

1. Are your learning packages organized according to a format? Can the modification or omission or any of the elements in your format be justified?

2. Will students be able to understand what they see and read? In other words, will they know what they are expected to do in an individualized program that incorporates your learning packages?

3. Are the learning packages attractively designed?

APPENDIX D

Student Module Feedback Form

Student Module Feedback Form

Instructions: In the items below, fill in the blank; circle "yes" or "no"; or place an "X" on the continuum in the appropriate blank.

1. How much time did you spend on the module? _____hours.

2. How relevant was the topic of the module to you? (Indicate this by placing an "X" in the appropriate blank.)

Irrelevant _____ : _____ : _____ : _____ : _____ Relevant
Somewhat

3. To what extent do you feel the pre- and posttests actually tested the material presented in the module?

Not at all _____ : _____ : _____ : _____ : _____ Completely
Somewhat

4. How helpful was the information presented in the module toward acquiring the competencies described by the objectives?

Confusing _____ : _____ : _____ : _____ : _____ Very helpful
No Help

5. How useful were the "objectives" in learning what the module was trying to teach?

Detrimental _____ : _____ : _____ : _____ : _____ Useful
No Help

6. How appealing was the overall structural arrangement?

Distracting _____ : _____ : _____ : _____ : _____ Appealing
No effect

7. How helpful were the pictorial illustrations?

Confusing _____ : _____ : _____ : _____ : _____ Facilitation
No help

Please identify confusing or unhelpful illustrations and point out where additional ones are needed.

8. What is the overall level of vocabulary in this module?

Too general _____ : _____ : _____ : _____ : _____ Too technical
Just right

9. What amount of information was provided in this module?

Too little _____ : _____ : _____ : _____ : _____ Too much
Just right

10. In doing this module, how did you feel you were treated?

As a robot _____ : _____ : _____ : _____ : _____ Humanly

11. How much worthwhile information do you believe you learned from having had this modular experience?

None _____ : _____ : _____ : _____ : _____ A great deal
Some

12. How enjoyable did you find this approach to instruction?

Distasteful _____ : _____ : _____ : _____ : _____ Very enjoyable
Indifferent

13. If you had your choice, what percent of your future instruction in this course would you like to have based on a similar module format?

_____ : _____ : _____ : _____ : _____ : _____
0% 20% 40% 60% 80% 100%

14. Did you have the background the module seemed to require? Yes No

15. Were you able to skip any sections of the module due to the results of the pretest? Yes No
If yes, did you do it?

16. Did the objectives describe the most important things you could do after experiencing this module? Yes No

17. Does the module really teach the objective it purports to? Yes No

18. Were there activity instructions or explanations that were unclear or misleading so that you were unable to proceed and required help? Yes No

19. Were there any statements that were inaccurate or inconsistent with respect to your previous knowledge? Yes No

20. In the "discussion of responses," were you satisfied with the answers given? Yes No

21. Were additional materials needed that were not provided? Yes No

22. Except for the pretesting, did the module provide for you as an individual? Yes No

23. In doing this module, did you feel a need for alternate routes? Yes No

24. How do you feel about filling out questionnaires?

Yuk (#*?@) _____ : _____ : _____ : _____ : _____ Yea

Take it
or
Leave it

25. In the space below, please list any suggestions as to how this module might be changed or improved.

Thank you for your help!

APPENDIX E

Computer Card

Resource Evaluation and Utilization

RESOURCE EVALUATION AND UTILIZATION

COLLEGE OF EDUCATION ● LEARNING RESOURCES CENTER

We rely on each individual using this resource to advise us of its usage and condition. The evaluation is concerned with the quality of the sound and visuals, not with the content. All problems are checked and corrected

THE NEXT STUDENT AND THE LRC APPRECIATE YOUR COOPERATION

1. Sound quality of resource?	( ) adequate	( ) a problem exists
2. Visual quality of resource?	( ) adequate	( ) a problem exists
3. Is anything missing?	( ) no	( ) yes (explain)

PROBLEMS: (use other side if necessary)

APPENDIX F

Strategy Considerations Related to the
Elements of Competency Based Education

APPENDIX F

Introduction

This appendix presents a two-dimensional matrix designed to assist the reader in pinpointing specific strategy issues relating to CBE implementation. Along one dimension of the matrix the defining, enabling and unique characteristics of CBE are listed. Along the other dimension, the major CBE implementation considerations are specified within three categories: generating support, resources utilization, and scope of implementation. At each intersection of the matrix--for example, Means for Evaluation of Outcomes vs. Orientation to Program--a number of questions may be raised relating to implementation strategies. These questions will typically vary in nature and scope for state, district and local agencies. Even among agencies at the same level, questions will differ, reflecting the unique implementation needs and concerns of each agency.

To illustrate the sorts of strategy issues that might arise at the state and district levels, sample questions are posed for one intersection of the matrix: Continuous Adaptation of Programs vs. Rate of Implementation. The reader is asked to keep in mind that these sample questions are intended only as an illustration. Any given agency is expected to have different or additional questions.

Table 3

Possible Strategy Questions Relating to the Implementation of Each Element of CBE														
		DEFINING CHARACTERISTICS					ENABLING CHARACTERISTICS				UNIQUE CHARACTERISTICS			
		STATED OUTCOMES												
		Means for Evaluation of Outcomes	Means for Evaluation of Negotiable Outcomes	Instructional Programs	Personalized Learning Programs	Continuous Adaptation of Program	Establish Goals Based on Social Conditions	Involvement of Students Educators and Community	Use of Settings, Persons and Resources	Decision Network	Life Role Competencies	Competencies Demonstrated by Students	Certification of Performance
GENERATING SUPPORT	Orientation to Program												
	Observation of External Programs												
	Program Information												
	Small-Scale Tryouts												
	Adoption												
RESOURCES UTILIZATION	Social Organizer												
	Advocacy Groups												
	Support Services												
	Incentives												
	Feedback												
SCOPE OF IMPLEMENTATION	Rate of Implementation												
	Proportion of Program Affected												
	Site Selection												
	Components of CBE Involved												

CHARACTERISTICS OF COMPETENCY BASED EDUCATION	QUESTIONS THAT MAY BE ASKED BY STATE DEPARTMENT OF EDUCATION (SDE) PERSONNEL RELATED TO THE RATE OF IMPLEMENTATION
A set of publicly declared rules and procedures for assuring the continuous adaptation and improvement of ongoing educational programs through the use of —	
• Formative and summative program evaluation data on program costs.	• How soon should districts be able to demonstrate decision making based cost and utility information? • Can the state demonstrate alternative cost-feedback decision making models appropriate for CBE? • Can the SDE provide technical support (computer technology) to districts with similar (or different) program characteristics? • Can the SDE provide the technical assistance necessary to design cost analysis systems?
• Formative and summative program evaluation data on the appropriateness of outcomes desired.	• Can the SDE provide districts with resource collections of outcome statements? • What types of technical assistance do districts need to determine the appropriateness of outcomes? • What materials and products do districts need for initial implementation of decision making processes related to program improvement? • How should the rate of implementation be adjusted based on available technology, technical assistance, and materials and products?

	• How should the rate of implementation be adjusted based on districts' capability to assimilate the changes?
	• Can implementation be facilitated by prior SDE development activities: e.g., goal bank, goal retrieval systems, training materials, pilot test sites?
• Student performance data	• What student-performance information systems exist?
	• How soon can alternative approaches be piloted?
	• How soon can needed systems be developed?
	• What technical assistance will be required by districts?
	• How soon can the resulting information be effectively used in program improvement decisions?
	• How will the rate of implementation affect other elements of CBE?
	• At what rate can practitioners develop the required evaluation and reporting skills?
	• Who should be involved in decisions about rate of implementation?
• Staff performance data, including data on the effectiveness of staff development programs.	• At what rate can districts be expected to initiate procedures that reflect needed changes?
	• To what degree do district administrators perceive this element as an improvement?
	• To what degree is the required change complex and difficult to understand?
	• To what degree is the change divisible and implementable in separate parts?

	• To what degree can the required changes be communicated and demonstrated? • Do existing state laws impinge on this element? • To what degree can/should state teacher organizations be involved with decisions relating to rate? • How are school districts to be involved in decisions about rate of implementation? • Is legislative action desirable to provide external pressure?

CHARACTERISTICS OF COMPETENCY BASED EDUCATION	QUESTIONS THAT MAY BE ASKED BY SCHOOL DISTRICT PERSONNEL RELATED TO THE RATE OF IMPLEMENTATION
A set of publicly declared rules and procedures for assuring the continuous adaptation and improvement of ongoing educational programs through the use of --	
• Formative and summative program evaluation data on program costs.	• To what degree does rate of implementation affect costs? • At what rate can CBE activities replace traditional expense items? • What technology is available to assess cost effectiveness? • Does the district have the skills to assess cost effectiveness? • How frequently are programs modified based on cost effectiveness feedback? • Is it possible to implement programs with built-in cost monitoring systems? • How soon is cost effective information needed for informed decision making? • Should cost effective analysis be piloted in one or more sites prior to implementation district wide?
• Formative and summative program evaluation data on the appropriateness of outcomes desired.	• How frequently should outcomes be modified? • Is it possible to select outcomes with documented evidence of appropriateness? • In what sequence should outcomes be evaluated for utility? • What portion of the program should be assessed for utility?

• Student performance data.	• To what degree can schools provide student performance data? • What support is available from other agencies? • Does the district have the expertise to develop or implement the necessary support systems? • How long will it take for teachers to develop new skills? • To what degree will teachers and administrators perceive the collection of student performance data as threatening their current status? • Who should be involved in making decisions about rate of implementation?
• Staff performance data, including data on the effectiveness of staff development programs.	• To what degree do staff members perceive the collection of staff performance data as an improvement? • To what degree is the required change complex and difficult to understand? • To what degree is the change divisible and implementable in separate parts? • To what degree can the required change be communicated and demonstrated? • How are staff involved in decisions about rate of implementation? • What implications does this have for negotiated agreements? • To what degree are staff development programs replicable and demonstrated to change staff performance? • To what degree will the collection of staff performance data be perceived to threaten the current status of administrators and teachers?